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IT AND QUARRY

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MAR 2 0 1943

JANUARY, 1943

FOR 25 YEARS THE LARGEST PRODUCER CIRCULATION IN THE FIELD

LUDLOW-SAYLOR

CONTROLLED-TEMPER SUPER-LOY WOVEN WIRE SCREENS

for super-severe service

TN1
.P65

●

SUPER-HARD, SUPER-TOUGH, SUPER-STRONG

CONTROLLED-TEMPER SUPER-LOY WOVEN WIRE SCREENS

withstand abrasion longer—

endure vibration better—

resist fatigue to the utmost

The background at top of page shows the "Perfect" Double-Crimp Weave.

The small cuts in the center panel compare Arch-Crimp Weave and Double-Crimp Weave.

The border at foot of page shows "Perfect" Double-Crimp Steel Wire Cloth which has been hot-dip galvanized after weaving.

Samples on request.

The LUDLOW-SAYLOR WIRE COMPANY SAINT LOUIS

MAR 19 1943

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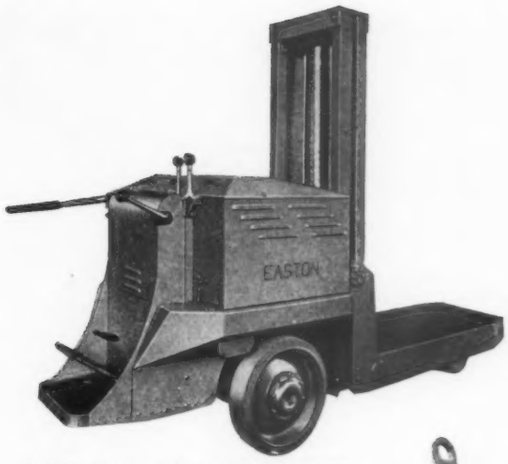


EASTON TLC-6 — TIER-LIFT ELECTRIC TRUCK CAPACITY — 6,000 LBS. SERVING THE NAVY AND OTHER ARMED FORCES, ALSO WAR INDUSTRIES. BULLETIN 162.

EASTON MODEL 1614 — INDUSTRIAL TRAILER. CAPACITY — 30,000 LBS. EASTON TRAILERS ARE HANDLING GUNS AND SHELLS IN MUNITIONS PLANTS. BULLETINS 191 AND 192.

EASTON ROCKER DUMP TRAILER SIMILAR UNITS ARE SERVING AIRCRAFT AND OTHER WAR INDUSTRIES ALSO ROCKER DUMP CARS

Keep moving WITH EASTON

VICTORY MODEL ELECTRIC TRUCKS

★ To help conserve critical materials EASTON has limited production of electric trucks to six standard government-approved models: the low-lift, the tier-lift, the low-platform and the high-platform trucks of 4,000 pounds capacity; and the 6,000 pound low-lifts and tier-lifts. Let EASTON engineers demonstrate how one of these six basic models can be adapted to your requirements.

INDUSTRIAL CARS AND TRAILERS

★ EASTON cars and trailers are used in almost every industrial haulage operation — handling raw materials at their source, moving parts and finished products through production processes, speeding up work at distribution centers. Capacities range from 4,000 pounds to 250 tons. Every EASTON car and trailer is a Victory Model, using fewer critical materials wherever possible and built from the ground up for "E-Plant" efficiency.

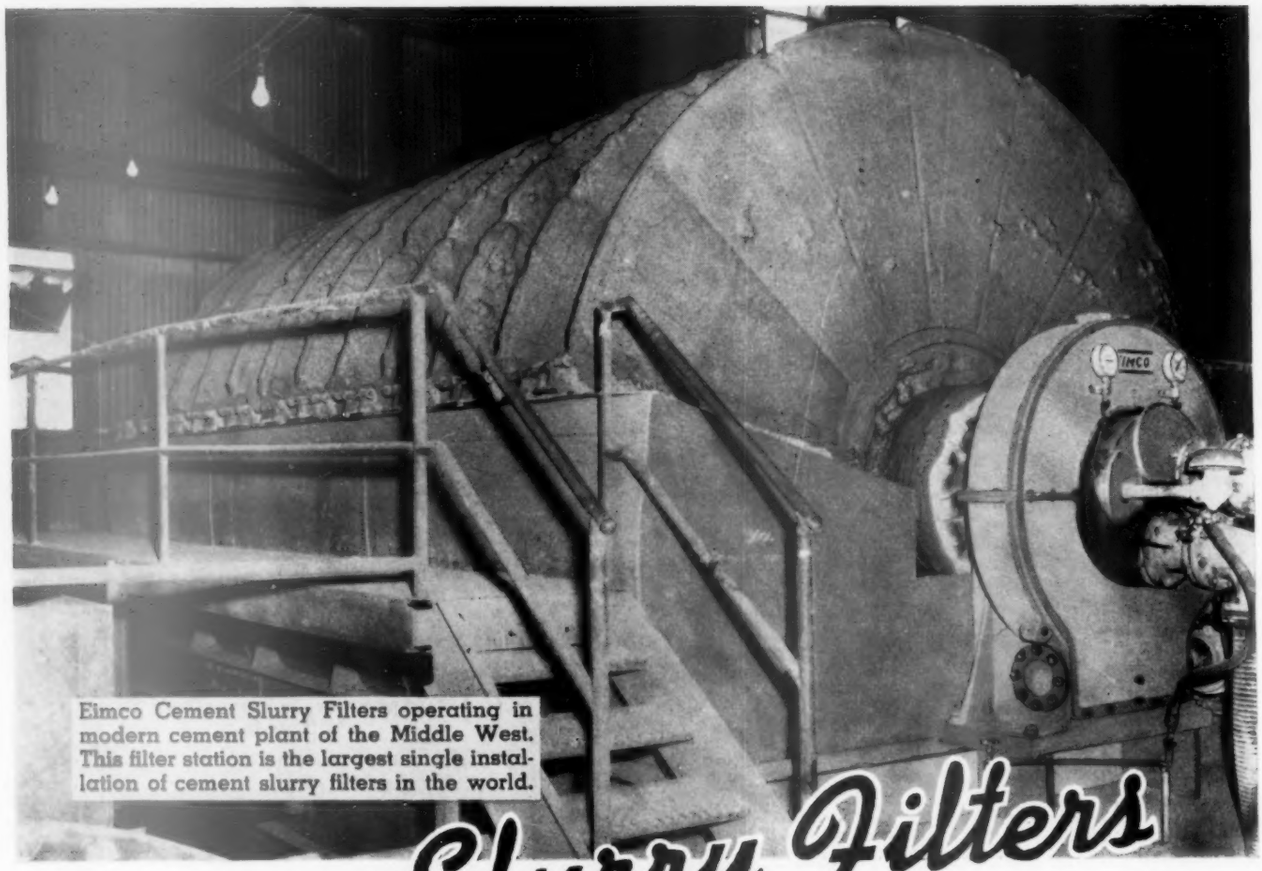
ENGINEERING COUNSEL

★ EASTON specializes in engineered material handling equipment designed to meet specific operating conditions. For new ideas in material handling, for repairs, or for replacements write to: Engineering Counsel, Easton Car & Construction Company, Easton, Pennsylvania.

B-1003

BELOW: EASTON DOUBLE-BODIED TANDEM SEMI-TRAILER. ON SEMI-TRAILERS SEE BULLETINS Nos. 173 AND 175.

PIT AND QUARRY, January, 1943, Vol. 35, No. 7. Published monthly by the Complete Service Publishing Company, 538 South Clark Street, Chicago, Ill. Subscription price $1 for 1 year in the U. S. and possessions, Canada, Central and South America; elsewhere $1 additional for each year. Single copies 50 cents. Entered as second-class matter February 28, 1932, at the Post Office at Chicago, Ill., under the Act of March 3, 1897.



Eimco Cement Slurry Filters operating in modern cement plant of the Middle West. This filter station is the largest single installation of cement slurry filters in the world.

Eimco Slurry Filters for the Cement Industry

Eimco Cement-Slurry Filters are designed, engineered and built in answer to the many problems of filtration peculiar to the Cement Industry—not just "another filter" following conventional lines and offered on a "take-it or leave it" or "make-it-work" basis. Eimco Cement-Slurry Filters were developed through the cooperative efforts of Cement Plant Operators and Eimco Filtration Engineers; after exhaustive studies of maintenance problems; fuel savings; reduced moistures; laboratory tests and the many questions that confront the investigator. As a result, numerous new features can be found in the Eimco Cement-Slurry Filter—one of many, 25% INCREASE IN BAG LIFE due to improved discharge of slurry cake.

Eimco Filtration Engineers are available, without obligation, to consult with plant operators, run laboratory tests, develop installation lay-outs, make recommendations to the end that the progressive Cement Industry may further increase production and reduce operating costs!

THE EIMCO CORPORATION

SALT LAKE CITY, UTAH, U.S.A.

NEW YORK	CHICAGO,	EL PASO	SACRAMENTO
120 Broadway	111 W. Washington St.	Mills Bldg.	1217 7th St.

WHAT ABOUT DRIVE AND IDLER ROLLERS?...
REPAIRS TO DRUMS AND BEARINGS...
HOW TO RESHAPE TREAD PINHOLES...
BUILDING UP TREAD TEETH...
THEW-LORAIN
Emergency FIX-IT Handbook
PLEDGED
CONSTRUCTION EQUIPMENT CONSERVATION
24 PAGES of
How to Keep 'Em On-the-Job IDEAS
HERE'S a brand new handbook for all Lorain owners and operators, full of practical ideas on how to make quick, emergency repairs that will keep your machine going. It will tell you how to temporarily substitute for critical, hard-to-get parts and materials—how to do more with what you've got.
Many of the suggestions are temporary expedients only, but they will keep your machine on the job—they will help to salvage and conserve worn parts, and will save you time and money, too. Write for your free copy of the Fix-It Handbook now or clip and mail the pledge form below if you want both the Handbook and a Conservation Emblem.
HOW TO GET THIS CONSERVATION EMBLEM
If you want to show others that you are helping to make your equipment last longer, sign and mail the pledge form below. Regardless of the type or make of your equipment, we will send you a colorful red, white and blue emblem (actual size 5" diameter).
PLEDGED
CONSTRUCTION EQUIPMENT CONSERVATION
THEW SHOVEL COMPANY, Lorain, Ohio
I hereby pledge that I shall do all in my power to prolong the life of any construction equipment in my ownership or care regardless of type or make.
I realize that it is my responsibility to avoid time-consuming delays caused by mechanical breakdowns and will see that frequent inspections are made and that necessary adjustments and repairs are promptly taken care of.
I will avoid waste of parts and materials and will eliminate any abuse of my equipment due to non-recommended operation.
Signed
Street Address
City
State
FIX-IT Handbook Wanted..... Lorain Model No..... Serial No.....
THEW-LORAIN
CRANES • SHOVELS
DRAGLINES • MOTO-CRANES

HOW TO MAKE CHAIN DRIVES RUN BETTER--LAST LONGER

1 Keep shafts exactly parallel, and wheels exactly in line. Misalignment causes uneven loading and unnecessary wear.

2 Remove chain frequently and clean thoroughly in some solution to wash out harmful dirt and grit. Then immerse in oil.

3 Protect chain and wheels from needless exposure to abrasive materials, dust and dampness. Use oil-tight casings with high-speed silent or roller chain drives.

4 Inspect shaft bearings by removing grease from bearing ends to expose the actual bearing metal. Rebabbitt if needed.

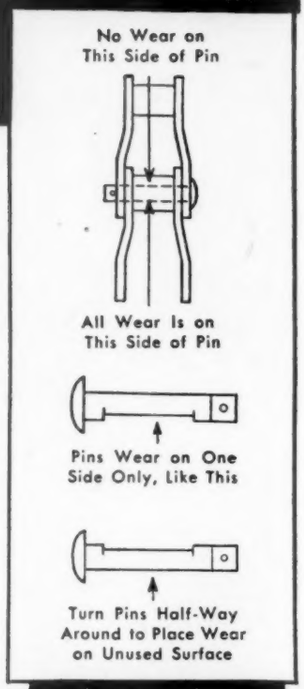
5 Flush ball or roller bearings periodically with fresh grease to drive out foreign matter and replenish the seals. In dusty atmosphere or dirty locations, use auxiliary dust seals.

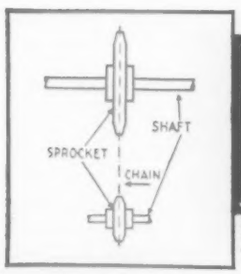
6 Check machinery supports for vibration and reinforce if necessary.

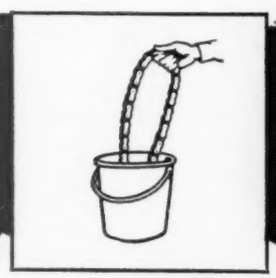
7 Operate chain with a little more slack than normal for a flat belt. Tight drives wear chain and sprockets needlessly.

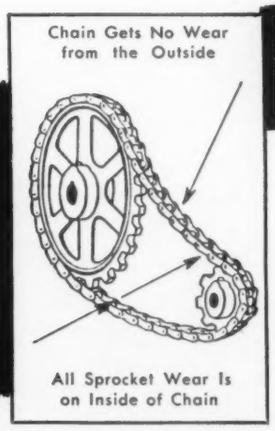
8 WHAT TO DO FOR WORN CHAIN

Turning a chain over so that the opposite side contacts the sprockets is a quick and easy means of restoring the original backing dimensions on cast pintle chains. On roller chains of either cast or steel fabricated types, this same simple operation will bring practically new surfaces into play under the rollers. In designs where pins are locked against rotation, wear is confined to that side against which the next link is held under tension. Rotating these pins 180°, places articulation action upon a practically unused pin area and, as far as the pins are concerned, restores original pitch. Bushed type chains afford another opportunity for pitch correction by reversing the bushings or rotating them 180°, but this involves the dismantling and reassembly of heavy press fits and should be avoided except as a last resort.


No Wear on This Side of Pin
All Wear Is on This Side of Pin
Pins Wear on One Side Only, Like This
Turn Pins Half-Way Around to Place Wear on Unused Surface







9 WHAT TO DO FOR WORN SPROCKETS

Cast-tooth sprockets, particularly in the larger diameters, frequently can be reversed on the shaft to bring chain barrels, or rollers, into contact with unworn root-diameter surfaces, but worn root-diameters on all types may be built up by welding and grinding smooth to fit the chain. Should wear have deformed the teeth of cast-tooth wheels into a hook-shape, these hooks may be ground off, or the wheels reversed.

LINK-BELT COMPANY

Chicago, Philadelphia, Indianapolis, Atlanta, Dallas, San Francisco, Toronto
Offices, warehouses and distributors in principal cities

8986-A

LINK-BELT CHAINS AND SPROCKETS

For Conveying and Mechanical Power Transmission

●**Today every piece of construction equipment might well bear the admonition "HANDLE WITH CARE" even though it was built to withstand severe usage for years. New equipment in many cases is impossible to obtain and replacement parts are often not immediately available, so the proper care and servicing of your equipment is mighty important now.**

Here are suggestions for engine care that will help to keep your Rear-Dump and Bottom-Dump Euclids operating efficiently and prevent costly repairs:

Keep Engine Clean — Dirt and dust form a grinding compound when mixed with oil, and cause excessive wear on moving parts. Oil containers should be kept clean and covered; engine filler cap should be carefully cleaned before removing so that accumulated dirt cannot drop into the crankcase. The oil filler breather should be cleaned with gasoline every eight hours and immersed in clean oil before replacing.

Never Over-Drive or Over-Speed — Governor setting should not be increased; when hauling downgrade the load should not be allowed to over-drive the engine. Increasing the engine RPM reduces engine life materially and results in serious damage to parts.

Keep all Bolts, Nuts and Connections Tight — Check and tighten every twenty-four hours to prevent leakage and resulting loss of efficiency as well as breakage of parts — an elementary precaution but an extremely important one nevertheless.

With good care your EUCLIDS will provide dependable performance long after they have been in operation for their "normal" service life. Making your EUCLIDS last longer now is not only good business, it's essential if there is to be enough hauling equipment available for mining operations and the construction of airports, naval bases, cantonments, and arsenals that must be completed in record time.

The EUCLID ROAD MACHINERY Co.
CLEVELAND, OHIO

EUCLID
SELF-POWERED HAULING EQUIPMENT
For EARTH . . ROCK . . COAL . . ORE
CRAWLER WAGONS • ROTARY SCRAPERS • TAMPING ROLLERS
EUCLID THE PIONEER

To Prolong Rope

MAKERS STRESS LUBRICATION

WIRE ROPE manufacturers, without exception, stress lubrication as the No. 1 war measure to lengthen rope life, save steel, maintain vital mining schedules. Everywhere, wire rope users are following this advice, and prolonging rope life with *Texaco Crater.*

Texaco Crater penetrates to the very core of wire rope, sealing each wire in a tough, viscous film that reduces internal friction and wear, keeps out moisture, prevents corrosion, makes ropes last longer.

Because of the benefits Texaco brings—

More copper is produced in the U. S. by mines using Texaco than by all other copper mines combined.

The outstanding performance that has made Texaco FIRST in the copper mining field has made it FIRST in the fields listed in the panel.

These Texaco users enjoy many benefits that can also be yours. A Texaco Lubrication Engineer will gladly cooperate . . . just phone the nearest of more than 2300 Texaco distributing points in the 48 States, or write: The Texas Company, 135 E. 42nd St., N.Y.

THEY PREFER TEXACO

★ More stationary Diesel horsepower in the U. S. is lubricated with Texaco than with any other brand.

★ More Diesel horsepower on streamlined trains in the U. S. is lubricated with Texaco than with all other brands combined.

★ More locomotives and cars in the U. S. are lubricated with Texaco than with any other brand.

★ More revenue airline miles in the U. S. are flown with Texaco than with any other brand.

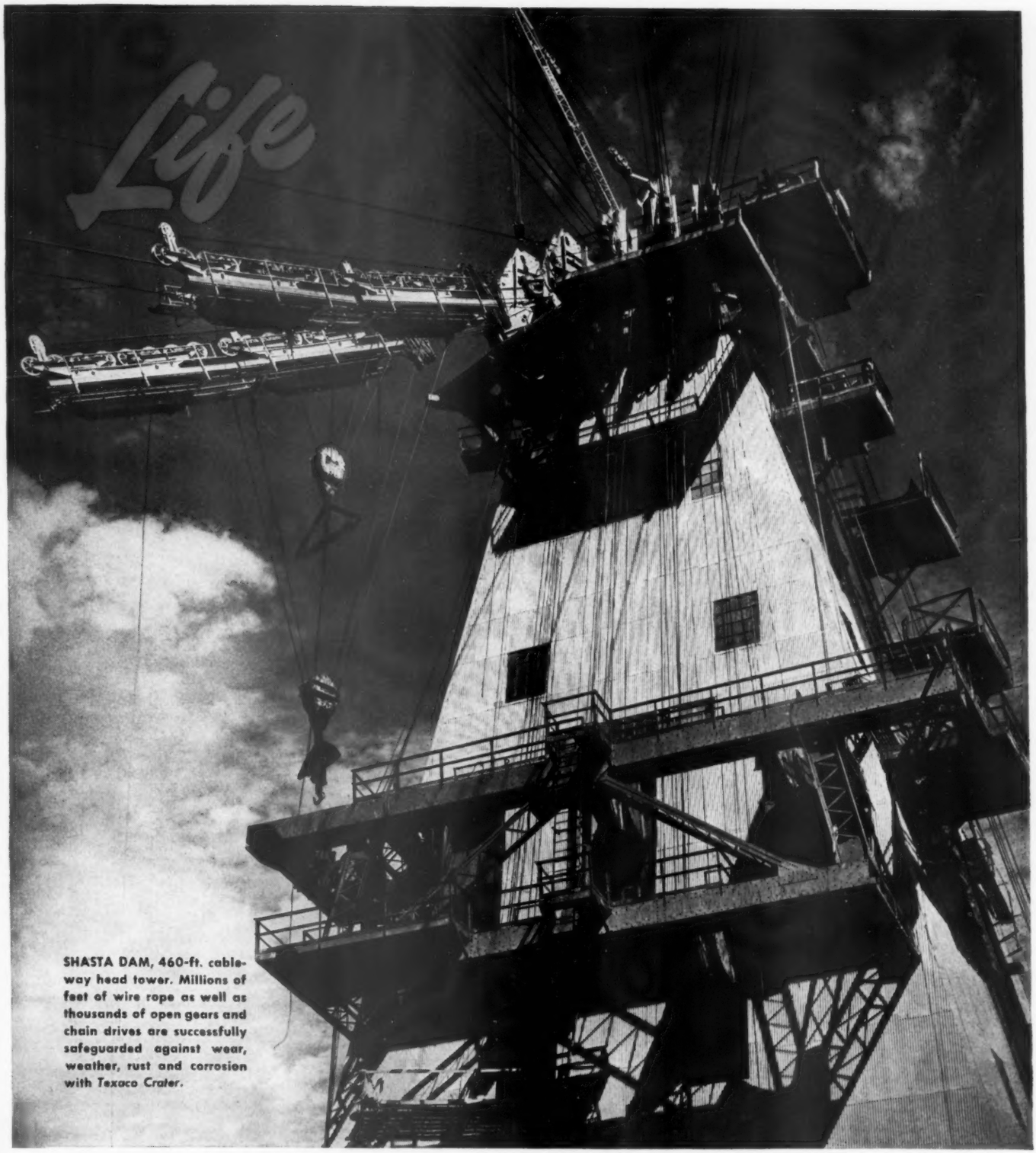
★ More buses, more bus lines and more bus-miles are lubricated with Texaco than with any other brand.

CRATER BOOKLET yours for the asking. 32 pages telling and showing what *Crater* does and how easy it is to use to protect wire rope, gears and chains.

TUNE IN FRED ALLEN EVERY SUNDAY NIGHT—CBS

TEXACO

TEXACO



SHASTA DAM, 460-ft. cableway head tower. Millions of feet of wire rope as well as thousands of open gears and chain drives are successfully safeguarded against wear, weather, rust and corrosion with *Texaco Crater*.

HELP WIN THE WAR BY RETURNING EMPTY DRUMS PROMPTLY

Lubricants and Fuels

FOR THE MINING INDUSTRY

YOU CAN DEPEND ON KING

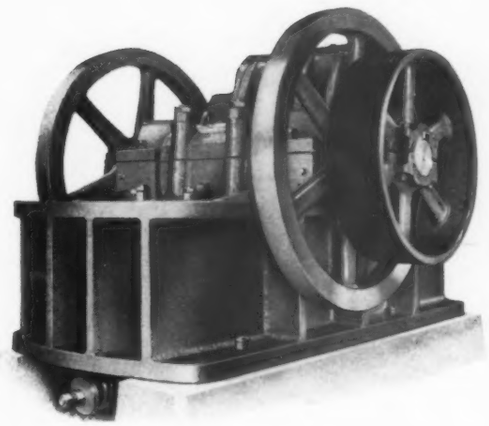
● Production for victory has unquestioned priority. While this may cause some inconvenience and sacrifice in filling orders, we know that it has the unqualified endorsement of everyone with whom America comes first.

But you can still depend on King for your complete explosive requirements —

Red Crown, the sensational new surface sensitized permissible, other King permissibles in complete range of speeds and stick counts, King Pellet Powder and King Detonite.

THE KING POWDER CO. INC.
CINCINNATI, OHIO
INCORPORATED 1878

A Trio of Money-makers!



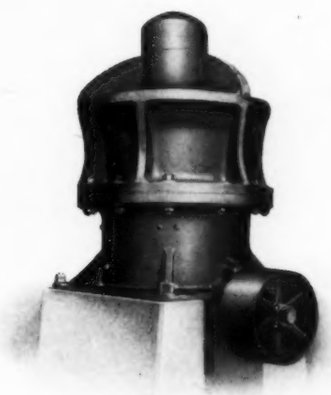
The Traylor Type TY Reduction Crusher (below) was introduced to supply the urgent need of a reduction machine having four characteristics,—(1) Facility to deliver the kind of product required, in the capacity desired; (2) Strength to stand up under its job; (3) Economy of operation and maintenance; (4) Foolproofness.

Strength is supplied by the all-steel construction; the quality and quantity of product are under positive control at all times; economy of operation and maintenance are assured by the patented non-chokable Bell Head and Curved Concaves, which enable every ounce of wearing metal to be used legitimately, and save power; the machine is rendered foolproof by automatic lubrication, and dust and tramp iron protection.

See our Bulletin 3112 for full details and table of sizes.

The Traylor Type H Jaw Crusher is a modernized Blake Crusher having (1) a heavy steel plate frame, scientifically welded into a single piece; (2) a new and simple swing jaw suspension AND (3) manganese steel curved Jaw Plates, which crush finer in greater capacity, at no extra cost.

For complete details, see our Bulletin 2105.



The Traylor Multi-Stage Fine Reduction Crusher could be considered, in a sense, two TY machines superimposed in one frame. In fact, the effect is of THREE machines,—a sizing crusher, a feeder and a fine reduction crusher, because the upper stage SIZES the material and FEEDS it to the lower or finishing stage in exactly the right quantity, evenly distributed.

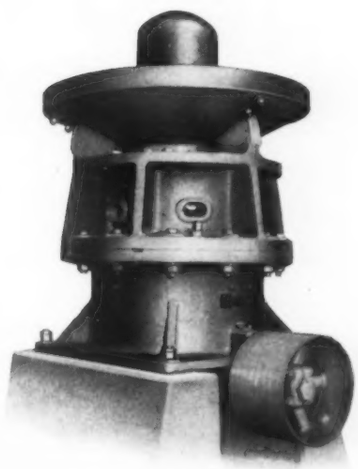
See our Bulletin 1113 for details.

WE BUILD

Rotary Kilns
Rotary Coolers
Rotary Dryers
Rotary Slakers
Scrubbers
Evaporators
Jaw Crushers
Gyratory Crushers
Reduction Crushers
Crushing Rolls
Grinding Mills
Ball Mills
Rod Mills
Tube Mills
Pug Mills
Wash Mills
Feeders
Rotary Screens
Elevators

This trio of crushers comprise a line-up that will deliver crushed product of all sizes, down to 5/16" and smaller at the lowest possible cost, and the range of sizes of each machine is such that small plants as well as those of considerable size may have the advantage of their efficiency. Thus, the Type H is built in seven sizes from 10" x 16" (23 T.P.H. to 2¼") to 30" x 42" (112 T.P.H. to 2¼" to 275 T.P.H. to 6"); the Type TY in five sizes from 1'-3" (8 T.P.H. to ⅜") to 4'-0" (140 T.P.H. to ¾" to 200 T.P.H. to 2⅛"); and the Multi-Stage in four sizes from 1'-8" (14 T.P.H. to ⅛" to 18 T.P.H. to ⅜") to 4'-0" (91 T.P.H. to 5/16" to 119 T.P.H. to ¾").

While these machines may now be secured only with high priority ratings, it is well for us to talk about them, and for producers to prepare for the sharp competition of the not-too-far distant future. Consult with us!



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ENGINEERING & MANUFACTURING CO.

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551 Howe St., Vancouver, B. C.

Export Department — 104 Pearl St., New York City. Foreign Sales Agencies: London, Lima, San Paulo, Rio de Janeiro, Buenos Aires, Santiago, Valparaiso, Autofagasta, Oruro, San Juan, P. R.

HE KNOWS HIS BUSINESS

Whipsawing a tractor around on the job takes "know-how". It also takes "know-how" to produce friction materials for that tractor which are *correct* and *dependable*.

Raybestos knows how. Thirty-eight years of experience enables Raybestos to service the entire industrial field with a *complete* range of brake linings and frictions, *specially* engineered to meet the *exact* requirements of every make and model of earth mover, excavator, etc.

Raybestos means a single, reliable source of correct and dependable friction materials for every machine and job. And fastest deliveries are assured through your local Raybestos distributor. See him or wire us.

THE RAYBESTOS DIVISION *of* ***Raybestos-Manhattan, Inc.,*** **BRIDGEPORT, CONN.**

RAYBESTOS IS AMERICA'S BIGGEST SELLING BRAKE LINING

Raybestos INDUSTRIAL FRICTION MATERIALS

FOR SHOVELS • CRANES • HOISTS • TRACTORS & EARTH MOVERS

This "Caterpillar" D7 tractor with rear-mounted LeTourneau double-drum Power Control Unit alternates between Dozer use and Carryall Scraper, which handles stripping on the longer hauls at this Alabama pit. LeTourneau equipment is built to give thousands of hours of hard use. The Scraper shown here is one of the very first LeTourneau 8-yard models, built in 1934, it's still in active service and good for several more seasons of work.

Your Track-Type Tractors, Equipped with LeTourneau Power Control Units can handle all these Mining Jobs

Clearing
Stripping
Roadbuilding
Rooting
Stockpiling
Feeding Grizzlies
Building Dikes
Digging Sumps
Moving Spoil Banks
Hauling Materials
Levelling

LeTourneau Power Control Units take your tractors out of the one-use class by enabling you to operate several different pieces of equipment from the same tractor. Here's how:

With a LeTourneau front-end Power Control Unit on your tractor you can operate a Dozer for clearing, feeding grizzlies, moving spoil banks, etc. That leaves the rear of your tractor free for mounting a standard 2-drum Power Unit. Then you can use the same tractor with a LeTourneau Carryall Scraper to strip and move big yardages on longer hauls . . . or a LeTourneau Rooter will work in combination with the Dozer, to give full fragmentation of all hard, rocky materials for low-cost, easy digging, thus save expensive blasting.

Easily Interchangeable

Many successful plants carry the usefulness of LeTourneau 2-drum Power Units a step farther, use them to operate LeTourneau Tractor Cranes for heavy lifting jobs . . . or big-capacity Tournatrailers for hauling ore from shovels to hopper.

LeTourneau Power Control Units enable one man to operate both tractor and equipment from the tractor seat. Thus, with a minimum of man-power you can keep tractors and equipment working at full efficiency.

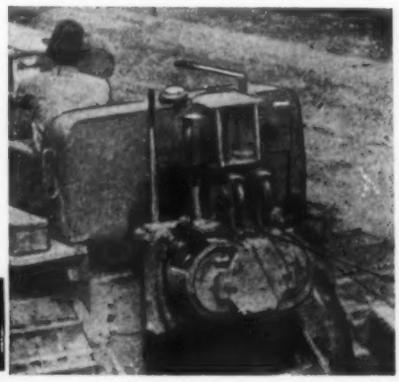
Over 25,000 LeTourneau PCU's

LeTourneau originated and perfected cable control. Contractors, miners, U. S. Engineers and operators—the men who know equipment best—have continued to specify LeTourneau cable control until today over 25,000 LeTourneau Power Units have been built—more than any 4 other makes combined. Fast, sure-acting in all temperature extremes. Easy, safe to operate. Simple to adjust. And you have the extra advantage of prompt, time-saving service and repair parts from LeTourneau-"Caterpillar" dealer stocks in strategic cities the world over.

On all the above jobs, the important thing is that LeTourneau Power Units keep your tractors and tractor equipment steadily at work. Your LeTourneau-"Caterpillar" dealer can develop many more time-saving applications right on your own property. Plan with him.

6 Years Old—Going Strong

This LeTourneau PCU, owned by Harry Hatfield & Co., of West Virginia, has been in use for 6 years. Says Supt. Frank DeJarnett, "It was used for 2½ years with a Bulldozer, 2½ years with an Angledozer, and a year with a 6-year old LeTourneau 12-yard. During this time it required only a brake band and two brake linings." Stout, welded cases, heavy-duty gears and bearings, big brake and clutch surfaces make records like that possible, insure you long, time-saving life in your LeTourneau Power Control Unit.



LETOURNEAU

PEORIA, ILLINOIS • STOCKTON, CALIFORNIA

Manufacturers of DOZERS, CARRYALL* SCRAPERS, POWER CONTROL UNITS, ROOTERS*, SHEEP'S FOOT ROLLERS, TOURNAPULLS*, TOURNAROPE*, TOURNATRAILERS*, TOURNAWELD*, TRACTOR CRANES. *Name Reg. U. S. Pat. Off.

Pick Your

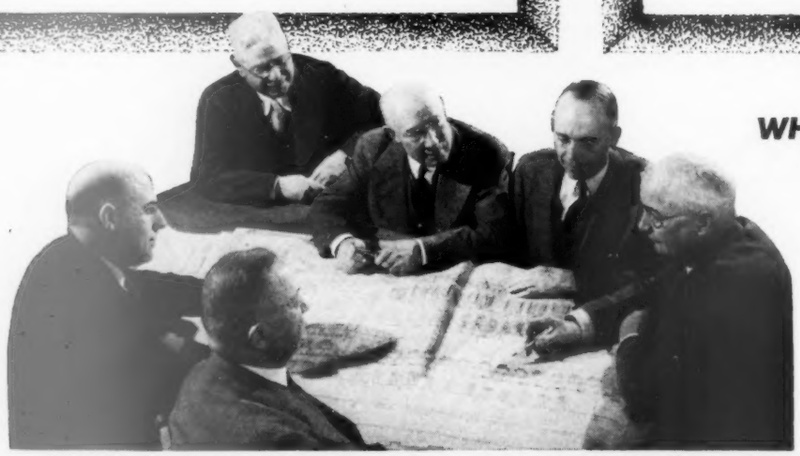
HERE ARE FOUR OF THE MOST PRESSING

Labor Shortage?

Does part of your process use men needlessly? Remember, crushing is a *machine* industry!

Unexpected Breakdowns?

How many of your key machines were designed for 24-hour-day service? Good point to check today!



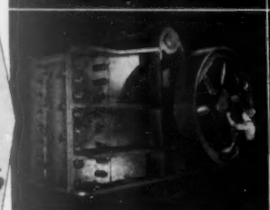
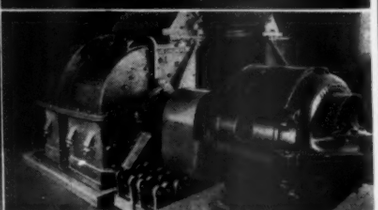
Collaboration of specialists is basic in A-C Cooperative Engineering.

WHICHEVER IT IS — CALL

MEN must work together better than ever before to win this war... *and so must machines!*

If failure of machines to work together properly is at the root of your wartime processing problem, remember there's one company that *specializes* in making machines "team up"... Allis-Chalmers.

Only Allis-Chalmers Makes a Complete Line of this Equipment!

Jaw Crushers	Gyratory Crushers	Crushing Rolls	Pulverators
			
All-steel primary and fine reduction. ¼"-12" product.	High-speed primary and secondary. 3" to 60" size feed.	6 different types. Reduction ratios from 5-1 to 10-1.	"Multi-impact": reduces non-abrasives to cubical shape.

Picture!..

PROBLEMS FACING PROCESSORS TODAY—

Lagging Schedules?

Maybe you have a bottleneck machine in your plant — possibly an added machine would load up other units.

Overworked Engineers?

Outside engineering cooperation may be all that's needed to get your staff out of a hole.

ON ALLIS-CHALMERS!

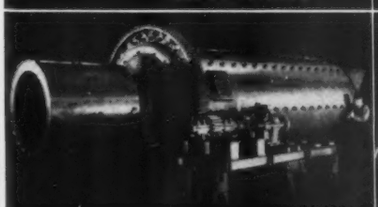
Here's a company that engineers and builds *all types* of basic processing equipment . . . in the *complete line* highlighted below.

Thus when you call on Allis-Chalmers Cooperative Engineering, you deal with engineers who are "complete line" engineers. They know *all* phases of the basic processes . . . how they all *fit together*.

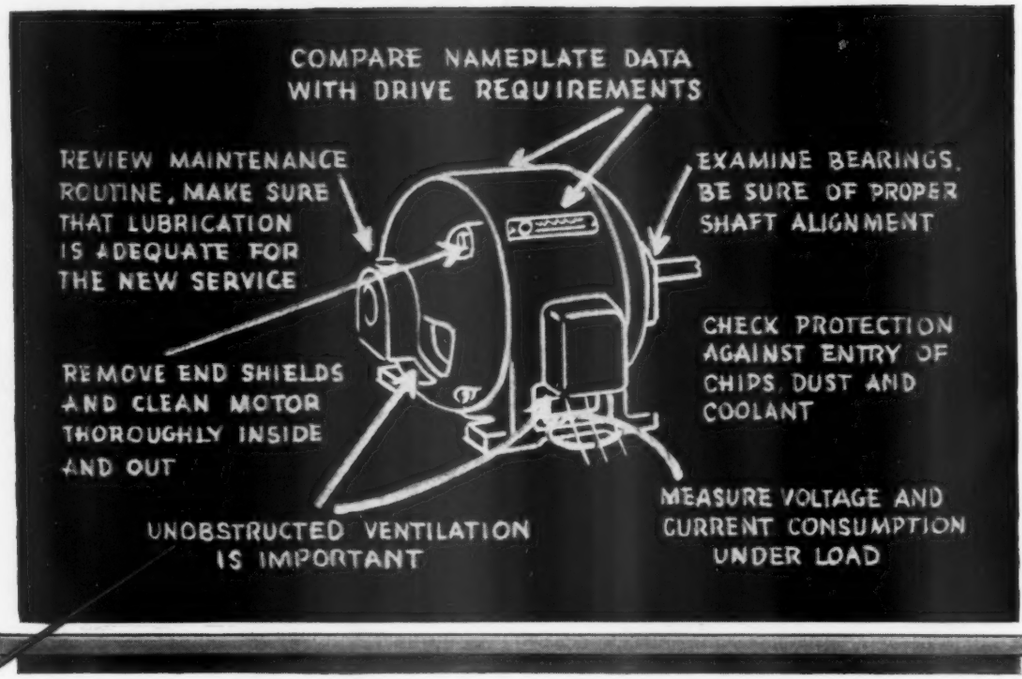
Result: you get recommendations that make existing equipment "team up" better . . . to give you greater wartime production.

Don't let another day go by without putting Allis-Chalmers Cooperative Engineering to work on *your* problem. No obligation, of course. Call your nearby A-C district office. Or write ALLIS-CHALMERS MFG. CO., MILWAUKEE, WIS.

A 1562A

Blade Mills	Vibrating Screens	Log & Sand Washers	Motors & Drives	Centrifugal Pumps
				
For washing and disintegration of materials up to 12".	Efficient separation and dewatering — 8 different types.	All-welded modern units for materials up to 3½" size.	Unbeatable team—Lo-Maintenance Motor & Texrope V-belts.	Largest line, highest efficiencies — built with motors.

it's time to be a crank about


COMPARE NAMEPLATE DATA WITH DRIVE REQUIREMENTS
REVIEW MAINTENANCE ROUTINE, MAKE SURE THAT LUBRICATION IS ADEQUATE FOR THE NEW SERVICE
EXAMINE BEARINGS. BE SURE OF PROPER SHAFT ALIGNMENT
CHECK PROTECTION AGAINST ENTRY OF CHIPS, DUST AND COOLANT
REMOVE END SHIELDS AND CLEAN MOTOR THOROUGHLY INSIDE AND OUT
UNOBSTRUCTED VENTILATION IS IMPORTANT
MEASURE VOLTAGE AND CURRENT CONSUMPTION UNDER LOAD

protect your production with this maintenance plan

Planned motor maintenance, keyed to today's loads and conditions, saves vital hours of production time by forestalling future breakdowns and delay. In replacing hit-or-miss motor servicing with a regular schedule of trouble-*prevention,* you'll find real help in "How to Care for Motors."

The check list (right) tells what to do. This book tells how to do it, using well-proved methods that save time and help assure long-lasting motor service.

And, of course, your local G-E Motor Representative is always ready to aid you in putting these suggestions into practice, or in getting the new motors you may need for essential wartime jobs.

HOW TO CARE FOR MOTORS

Every supervisor or maintenance man will find this book of value : : . it tells what to do to get the most out of motors, old or new. If you're setting up a maintenance program, or if you're "switching" motors from one job to another, or equipping machines with new motors, you'll find this booklet of helpful facts will save you time. Write for a copy.

General Electric, Sec. C750-154
Schenectady, N. Y.

Yes, send me a copy of "How to Care for Motors," GEA-2856A.

Name.....

Title.....

Company.....

Address.....

City.....State.....

9030

MOTOR CARE

HERE'S WHAT TO DO!

1. Make sure that motors are selected to *match the job.* Install motors so they are properly aligned with the driven load and are easily accessible for regular inspection.

See "How to Care for Motors"

2. Keep motors free from dust and dirt. Establish a definite cleaning schedule.

See "How to Care for Motors"

3. Be sure that lubrication is frequent enough to take care of increased production. See that employees are instructed as to proper methods. Also guard against over-lubrication.

See "How to Care for Motors"

4. A general overhauling of hard-worked motors will add years to their life. If your motors haven't had an overhaul in the last year, try to arrange your production schedule to permit one as soon as possible.

See "How to Care for Motors"

If you need new motors for important war work, check with your G-E Motor Representative on how to get Tri-Clad motors quickly.

The Navy "E", for Excellence, has been awarded to 92,780 General Electric employees in six plants manufacturing naval equipment.

BUILDER OF

TRI CLAD MOTORS

GENERAL ELECTRIC

Maintenance starts with the Shot

AMERICAN
CYANAMID & CHEMICAL CORPORATION

EXPLOSIVES

Correct blasting will minimize maintenance *right down the line*

BREAKING rock or other material down to the right sizes—avoiding big lumps as well as fines—is the result of correct blasting practice. It means minimizing wear and tear on steam shovels, trucks, cars, hoists and crushers. It helps every piece of equipment work at its best, with the least maintenance cost.

AMERICAN Explosives and Blasting Supplies are made under exacting specifications in well equipped plants. Chemical control and thorough inspection insure adherence in manufacture to the methods and processes developed by our research.

Today, as never before, efficient blasting is all-important. Capable technical service men are available to assist you with your blasting problems.

- **HIGH EXPLOSIVES**
- **PERMISSIBLES**
- **BLASTING POWDER**
- **BLASTING ACCESSORIES**

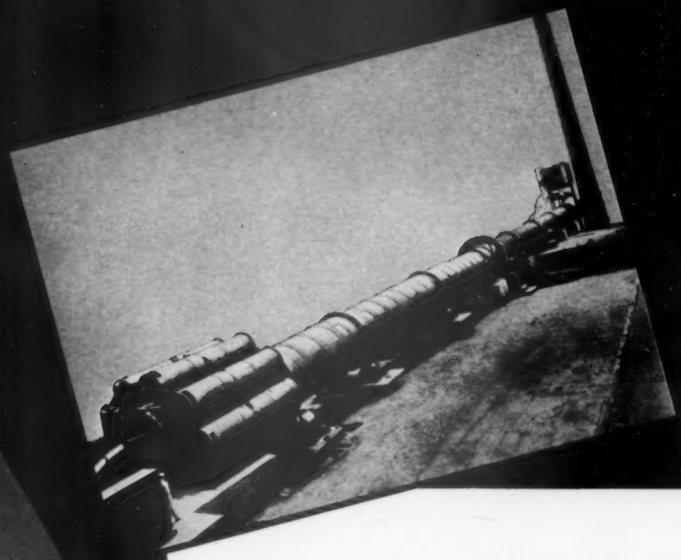
American Cyanamid & Chemical Corporation

A Unit of American Cyanamid Company

30 ROCKEFELLER PLAZA • NEW YORK, N. Y.

EXPLOSIVES DEPARTMENT

SALES OFFICES: Pittsburgh, Pa. Bluefield, West Va. Scranton, Pa. St. Louis, Mo. Chicago, Ill. Pottsville, Pa. Hazleton, Pa. Maynard, Mass.

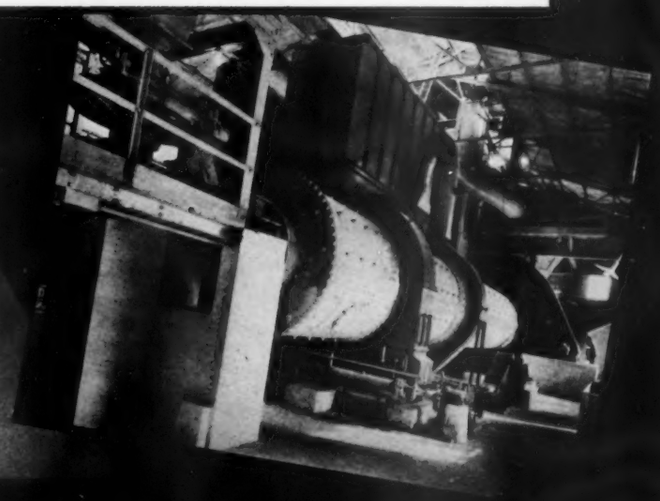


ROTARY KILNS

Machinery for Cement-Lime-Ore

In addition to a complete line of Rotary Kilns and Grinding Mills, F L. Smidth & Co. also manufacture Coolers, Pre-Coolers, Pre-Heaters, Recuperators, Air Separators, Agitators, Packers, Extractors, Feeders, Burners, etc. and their auxiliary equipment, for the manufacture of Cement, Lime, Ores, and Allied Products

GRINDING MILLS



F. L. SMIDTH & CO.

60 EAST 42ND STREET

CEMENT ENGINEERING
CEMENT MACHINERY

NEW YORK, N. Y.

APPLICATION

Manufacturer PIONEER ENG'G WORKS

Machine PRIMARY JAW CRUSHER

Bearings SKF SPHERICAL ROLLER

TOUGH *of course it's tough*

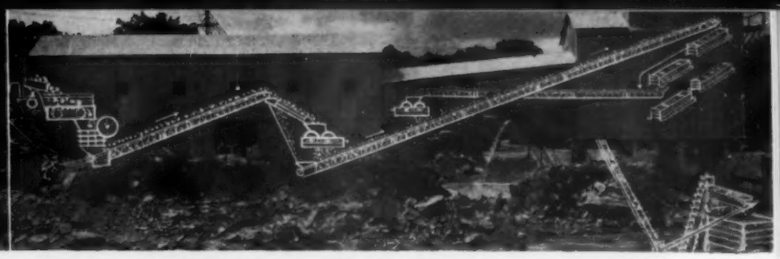
BUT SKF'S CAN TAKE IT

SKF Bearings aren't looking for soft jobs nor push-overs. You can tell that with a glance at this Pioneer 2436 Primary Jaw Crusher. These are the places that need all the full load-carrying capacity that SKF self-aligning characteristics allow—the characteristics that compensate for shaft and frame deflections—that enable SKF Bearings to take war-time duty. When bearings have these advantages, you know they're built for tough jobs . . . anywhere. 5195

SKF INDUSTRIES, INC., PHILADELPHIA, PENNA.

ARMY E NAVY

SKF BALL AND ROLLER BEARINGS



Rock Plants AS YOU LIKE THEM •

No two rock jobs are alike. They vary in material — in the size of the feed — and the size and number of sizes in the product. Some rock must be washed — some rock is hard and brittle — others are tough — and some is soft.

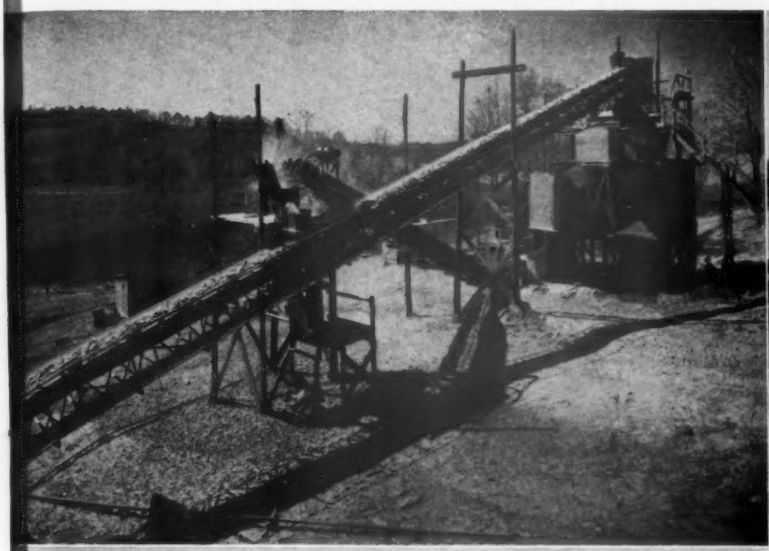
In one case, screening is the big problem — and in others it is crushing.

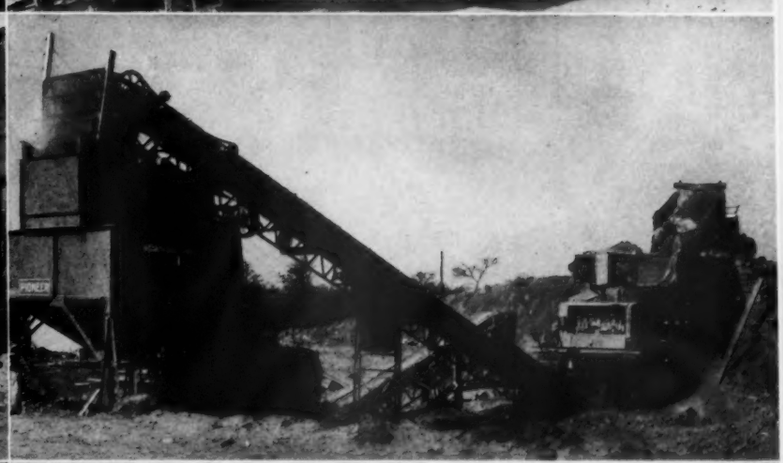
For *your* rock job, you want a plant that is tailored to your problem.

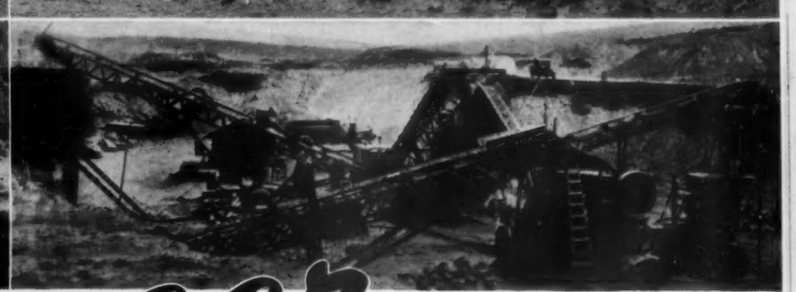
That is where Pioneer can help you. Pioneer Rock Plants are tailor made to suit the particular requirements of the job. Standard Pioneer Units are used — jaw crushers — roll crushers — screens — conveyors — elevators — and bins.

Tell us your rock problem. We will make a preliminary layout of a plant to suit your conditions. It will be submitted to you for revision and consideration. After approval, we will make finished installation and foundation drawings.

Furthermore, a Pioneer Rock Plant is complete with power, drives, and all accessories. It is fully engineered and factory built — yet tailored to your job — and there is no cost for this Pioneer Engineering Service.







Pioneer

ENGINEERING WORKS

Minneapolis, Minnesota, U.S.A.

War-Time Suggestions for 1943

Save Time and Man-Hours

Conserve Equipment

Lubricate Repair Maintain

Make One Truck do the Work of Many

Brooks LOAD LUGGER

The necessity for saving trucks and tires means that you must get the most out of the equipment you already have.

By mounting a LOAD LUGGER on the chassis, and using several "bodies", or buckets, for hoisting, hauling and dumping continuously, you can increase trucking efficiency and handle many more payloads per day.

For greatest economy, use five to ten buckets in rotation with each LOAD LUGGER, depending on the length of haul and number of men working.

The more buckets you are able to use with each unit of equipment, the greater the production on any job of material handling.

Note the simplicity of the LOAD LUGGER . . . which keeps maintenance at a minimum.

Speed up your operations with a LOAD LUGGER on road jobs, quarry work, feeding crushers and general hauling.

Write for Catalog No. 44

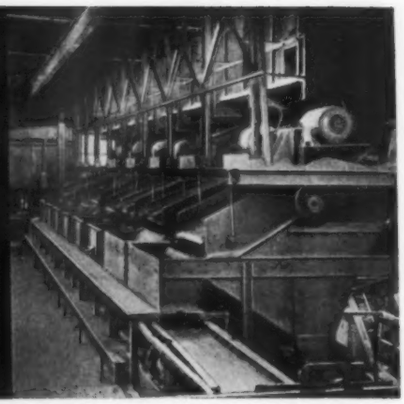
Brooks EQUIPMENT AND MFG. CO.

110 Davenport Road — *Distributors in all Principal Cities.* — **Knoxville, Tennessee**

DENVER EQUIPMENT

for 24-hour Production *from* CRUSHER to FILTER

USE OUR BATCH & CONTINUOUS TESTING SERVICE



No. 30 DENVER FLOTATION CELLS are the machines built for large tonnage plants . . . they have all the mechanical and metallurgical advantages of the smaller tonnage units. The present period makes it essential to produce a high grade concentrate and still handle maximum tonnage. The Denver "Sub-A", due to the distinctive *gravity flow* method of circulation, eliminates pumps and elevators. Correct mechanical agitation and aeration account for the selective action in each cell. The *cell to cell* design permits cleaning and recleaning operations without shutdowns and insures *"24 Hour Production."*

DENVER-DILLON VIBRATING SCREENS are proving themselves in the present emergency . . . many new uses are being found for these units. If you are not already familiar with this vibrating screen, write for a copy of Bulletin No. S3-B3.

THESE DENVER SPIRAL RAKE THICKENERS are now available in the lowhead beam type design in sizes up to and including 75 feet in diameter. Patented spiral rakes move the material to center cone in one revolution. A Denver Spiral Rake Thickener will reduce your costs.

DENVER VERTICAL SAND PUMPS have long been leaders in the field of difficult pumping problems . . . the pumping of sticky flotation froth, gravity concentrates, deslimed pulps, or pulps containing gritty material . . . any material which can be made to *flow by gravity* to the feed opening can be handled by these efficient vertical pumps. Built in six sizes and described in Bulletin No. P10-B.

DENVER HYDROCLASSIFIERS are solving the most difficult fine sizing and desliming problems. Accurate separations are now being made in the 100 mesh range and finer; this fine separation requires considerable classification area as well as minimum agitation. Denver Hydroclassifiers are built with enclosed worm gear drive and convenient handwheel which easily lifts rakes. The patented spiral rakes convey material to center in one revolution. The metallurgical and mechanical advantages of this unit will fulfill the most exacting requirements where a separation of extremely fine products is desired. For flowsheet applications and complete details on this machine, write for new Bulletin No. C4A-B.

Every Plant Should Have a copy of this "Catalog of Reconditioned and New Equipment for *Immediate Shipment*". Delivery is very important today, and you can fill many of your emergency needs from this list. Before you buy any equipment, it will pay you to investigate the machines now "In Denver Stock." Write today for your copy of this Bulletin No. G4200.

USE OUR BATCH & CONTINUOUS TESTING SERVICE

DENVER EQUIPMENT 24 HOUR SERVICE COMPANY

NEW YORK CITY, NEW YORK: 50 Church St.
CHICAGO: Suite 1005, 69 W. Washington St.
SALT LAKE CITY, UTAH: 727 McIntyre Bldg.
TORONTO, ONTARIO: 45 Richmond St. W.
MEXICO, D.F.: Edificio Jalisco, Calle Ejido No. 7
MIDDLESEX, ENG.: 493A, Northolt Rd. S. Harrow
RICHMOND, AUSTRALIA: 530 Victoria Street
JOHANNESBURG, S. AFRICA: 8 Village Road

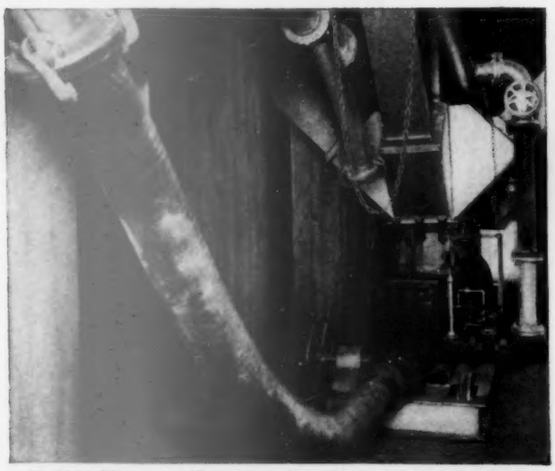
STANDARD RELIABLE 24 HOUR SERVICE EFFICIENT

DENVER EQUIPMENT COMPANY, 1400 17th St., Denver, Colorado

FULLER *serves*

Fuller-Kinyon transport lines for conveying Portland cement to an ocean-going vessel, conveying distance 3600 feet.

Pioneers in developing and building equipment to solve the industry's problems.



Fuller-Kinyon Pump conveying cement from silos to ocean-going vessel.

Fuller-Kinyon Remote-Control Unloader unloading cement from a river barge.

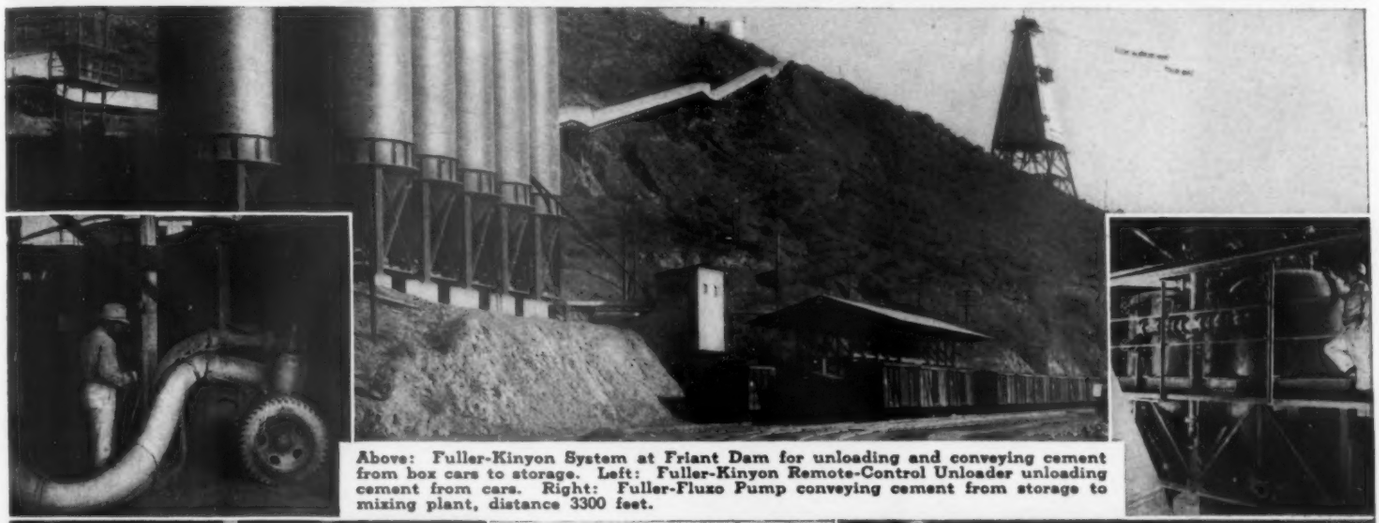
G-30T

FULLER COMPANY

CATASAUQUA — PENNSYLVANIA

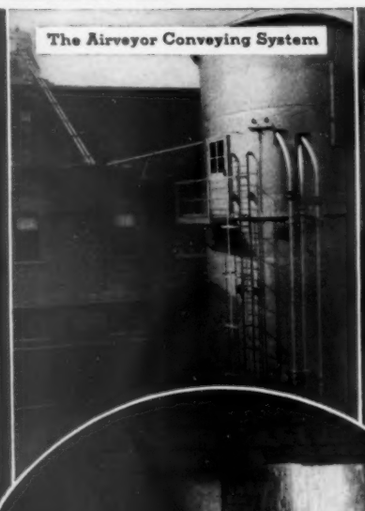
CHICAGO—Marquette Bldg. SAN FRANCISCO—Chancery Bldg.

The Cement and Allied Industries

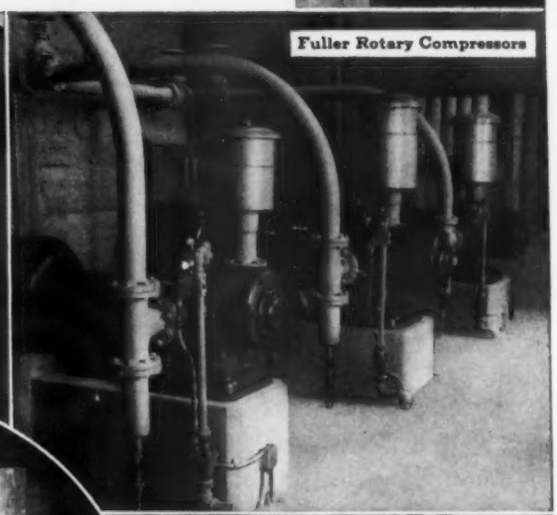


Above: Fuller-Kinyon System at Friant Dam for unloading and conveying cement from box cars to storage. Left: Fuller-Kinyon Remote-Control Unloader unloading cement from cars. Right: Fuller-Fluxo Pump conveying cement from storage to mixing plant, distance 3300 feet.

Portland cement cooler



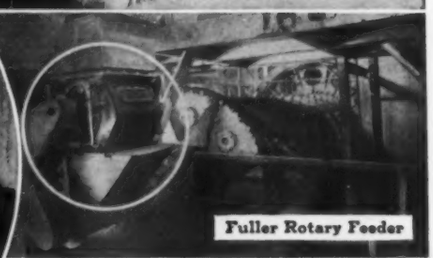
The Airveyor Conveying System



Fuller Rotary Compressors

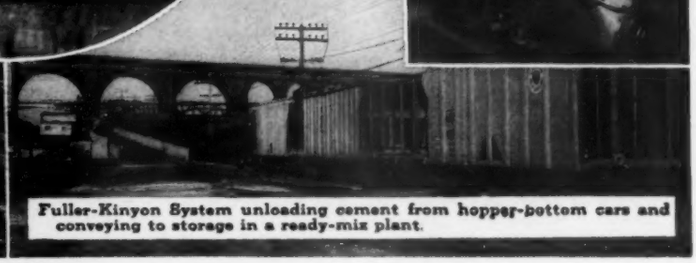
Rotary Gate Valves

Interior, Air-Quenching Clinker Cooler



Fuller Rotary Feeder

Fuller-Kinyon System conveying cement from silo to packer bins.



Fuller-Kinyon System unloading cement from hopper-bottom cars and conveying to storage in a ready-mix plant.

Buda Diesel Powers this *Sand "Pipeline"*

for less than 1¢ per ton

SINCE March 1942 this rugged BUDA 125 H. P. Diesel has moved 150,000 tons of sand out of this pit at Anniston, Alabama. Owner John B. Lagarde reports that costs are less than 1c per ton and performance has been highly pleasing on this tough, punishing job.

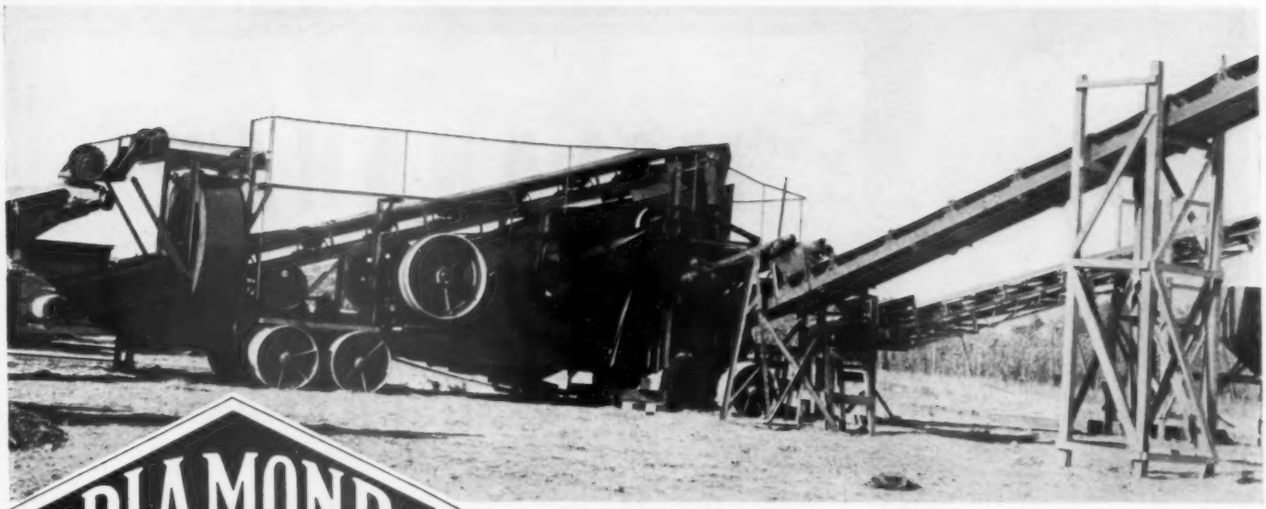
The outstanding fact about BUDA performance is that you get the same highly efficient, completely reliable operation even after thousands of hours of toughest service. For every power requirement—crushers, draglines, washers, hoists, conveyors, shovels, trucks, compressors, generator sets or pumps—you'll find BUDA the power that *truly cuts costs.*

●

BUDA builds Diesel, gasoline, butane and natural gas engines from 20 to 340 h.p. You'll be dollars ahead to write or wire *now* for complete information!

THE BUDA COMPANY
HARVEY (Chicago Suburb) ILLINOIS
GASOLINE and DIESEL ENGINES—20 to 340 H. P.

BUDA ... for MORE HORSEPOWER HOURS per DOLLAR



DIAMOND

When Contractors and Quarrymen Need Maximum, NON-STOP Production . . .

they specify a DIAMOND PLANT

RECORDS LIKE THESE SPEAK FOR THEMSELVES

1942 S. W. Ordnance Job

A Diamond No. 95 Plant is turning out
4,000 TO 6,000 TONS PER DAY
on a one million ton aggregate project. You can't do that without BIG capacity, and the toughest kind of "no-shut down" dependability.

1941 Big Western Ordnance Job

producing 2" minus crushed gravel for roadway sub-base and railroad ballast. DIAMOND No. 95 Plant.

Started—May 12, 1941
Finished—November 6, 1941
Calendar time—179 days, 24 hours a day, 7 days a week—total elapsed time—4,296 hours
Scheduled operating time—3,920 hours
Actual operating time—3,320 hours
or 84% OF SCHEDULED TIME
Aggregate production—463,223 cubic yards
119 cu. yds. per scheduled hour for entire period
139 cu. yds. per actual operating hour for entire period.

4,000 tons per day! 7 months' continuous run! Operating time 84% of scheduled time! Results like these don't grow on trees, but they do reward the good judgment of men who select DIAMOND "ROTOR-LIFT" Plants for the biggest and most urgent assignments in America's vast War program.

The Exclusive DIAMOND "ROTOR-LIFT" Gives You Unequalled Advantages

Each unit in the DIAMOND portable plant—jaw crusher, roll crusher, vibrating screen, conveyors—is a proven veteran, individually. In addition, the complete DIAMOND Plant is designed as a synchronized unit, perfectly balanced for smooth operation and maximum capacity, ruggedly built for long, non-stop service with an absolute minimum of stoppage for maintenance.

Diamond Portable Plants in Many Sizes and Types

QUARRY PLANTS—port. and sta.
No. 20—Portable, non rotor-lift
No. 36—Portable, rotor-lift
No. 65—Portable, rotor-lift
No. 95—Portable, rotor-lift
Portable washing-screening Plants
Portable and stationary Crushers
Vibrating, rotary and scalping Screens,
Conveyors, bins, feeders, etc.

WRITE, WIRE OR PHONE for complete information and prices on plants or any individual units or installations. Our engineers will gladly help you to solve any crushing, screening or conveying problems.

DIAMOND IRON WORKS, INC.
ESTABLISHED 1880
AND THE MAHR MANUFACTURING CO. DIVISION
1801 Second Street N. MINNEAPOLIS, MINN.

Crushing limestone—coal and lime.

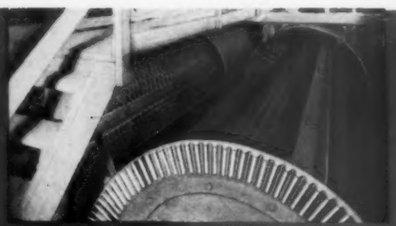
Sand drag and log washer at a Maryland plant.

48" heavy duty reciprocating feeder—push button control.

Crusher, elevator and vibrating screen on lime.

Giant scrubber and screen on limestone.

Primary single and secondary double roll crushers in cinder block plant.



Twin revolving screens on limestone.

Roller grizzly removing dirt and fines.

McLANAHAN

PRODUCTION MACHINERY

Meets

TODAY'S EXACTING DEMANDS!

Pit, mine and quarry operations are today paramount suppliers to America's consistent effort! Equipment *must* operate under boosted production schedules — often under adverse conditions.

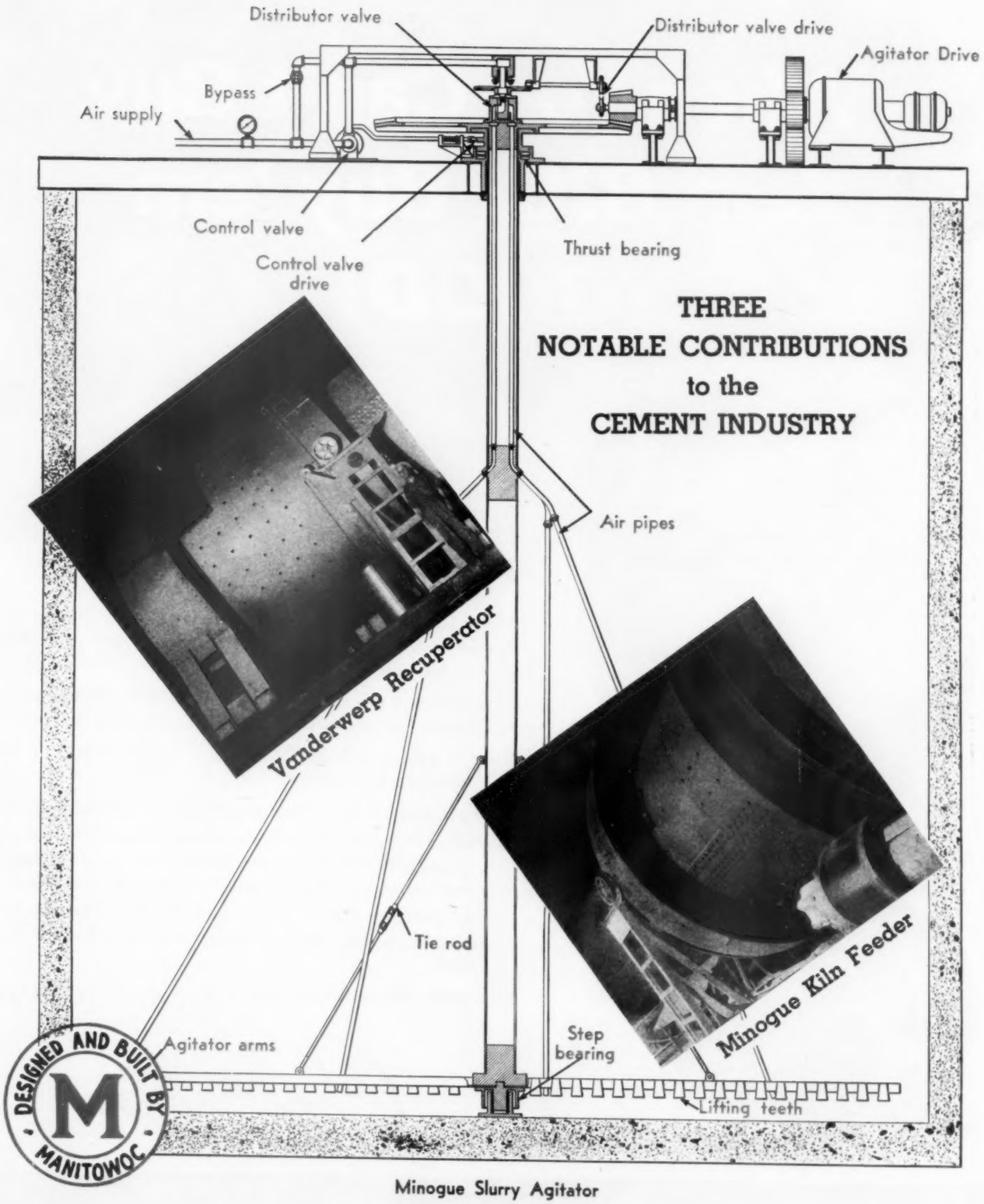
McLanahan equipment, always engineered and constructed to meet the most exacting demands beyond those written in normal specifications, readily enables pit, mine and quarry operators to meet today's unprecedented demands.

Investigate the many fine McLanahan equipment features and be assured "plus" production.

McLANAHAN and STONE CORPORATION

Pit, Mine and Quarry Equipment Headquarters Since 1835

HOLLIDAYSBURG · · · · · PENNSYLVANIA



Minogue Slurry Agitator

MANITOWOC ENGINEERING WORKS

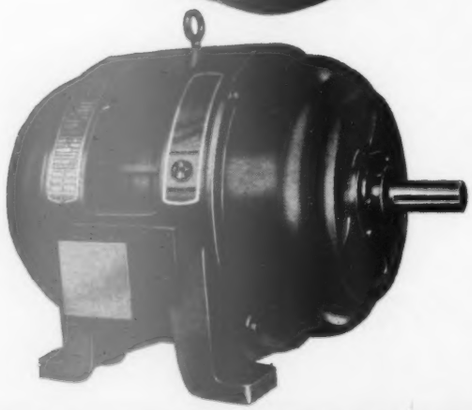
Division of

Manitowoc Shipbuilding Company

GENERAL OFFICES AND PLANT
Manitowoc, Wisconsin

CHICAGO OFFICE
131 E. Wacker Drive

When You Can't Buy 'em *BIG*—Buy 'em *GOOD!*



REALLY, it's no hardship when you have to buy smaller motors. *You save money.* But remember, when you can't buy 'em big—buy 'em good.

Now that you cannot depend on oversize to take your motors through tough service—you must depend on quality.

That is why you should investigate Fairbanks-Morse Motors with *Copperspun* Rotors.

The winding of the *Copperspun* Rotor is centrifugally cast of COPPER in one piece. It provides electrical and thermal characteristics that give this motor the stamina to stand up under the most severe service without mechanical failure. You can operate a Fairbanks-Morse Motor with *Copperspun* Rotor at its full rated capacity continuously and indefinitely without fear of damage from overloading.

Fairbanks, Morse & Co., 600 S. Michigan Ave., Chicago, Ill.

Copperspun

FAIRBANKS-MORSE

DIESEL ENGINES
PUMPS
ELECTRICAL MACHINERY
SCALES
MOTORS

WATER SYSTEMS
FARM EQUIPMENT
STOKERS
AIR CONDITIONERS
RAILROAD EQUIPMENT

F M

Motors

CONTROLLED VIBRATIONS WITH TRUE CIRCULAR MOTION *IS BUILT INTO ALL*

SECO

VIBRATING

SCREENS

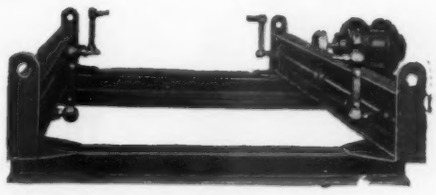
The patented SECO Screen Cloth Vibrator has helped a great many producers keep their fine screens turning out damp, sticky material and maintain continuous operation in wet weather. Maybe it could help you.

"EVERYTHING'S UNDER CONTROL" on the "Sizing Front" for operators who process aggregate through a SECO Screen.

The SECO patented control feature eliminates the necessity of resilient supports which dampen the action of a gyrating body. The resultant SHARPER action of the SECO goes a long way toward the elimination of blinding —which naturally improves actual sizing and capacity.

Furthermore—the controlled motion of SECO gives an excellent conveying action so that if desired the screen will operate at less slope than most inclined screens. A SECO will do close sizing.

Completely descriptive SECO catalog is yours for the asking.



SECO Equalizer Assembly connects body and base frame. This is for connecting purposes only—no power goes into it. This controls the true circle throw motion set up by the eccentric shaft and makes sure that all points on screening surface—from back to front—operate in exactly the same plane. There are no "dead" areas.

SCREEN EQUIPMENT COMPANY, INC.

9 LAFAYETTE AVE. BUFFALO, N. Y.

Williams Hammer Crushers

Handle Larger Rock :: 50% Less Investment :: Better Product

The "Slugger" which reduces "one-man" size limestone to 1", ¾" or agstone.

Feed opening of the "Mammoth" crusher which crushes 48" rock to 1" in one operation.

A Size for Every Job

The "Mammoth" crushes 48" rock to 3", 2" or 1" in one operation. Takes the place of a primary breaker and recrusher.

The "Jumbo" reduces 20" to 30" rock to 1¼" and smaller.

The "Slugger" crushes screen rejects or "one man" size rock to 1", ¾", ½" and finer.

The "NF" type is supreme as a recrusher for reducing 5" stone to 1", ½" or agricultural limestone.

The "Non-Clog" for crushing wet muddy rock. Cannot be clogged.

Fine Grinders • *Air Separators* • *Dryer Mills*

The Williams Patent Crusher and Pulverizer Co.

802 St. Louis Ave. ST. LOUIS, MO.

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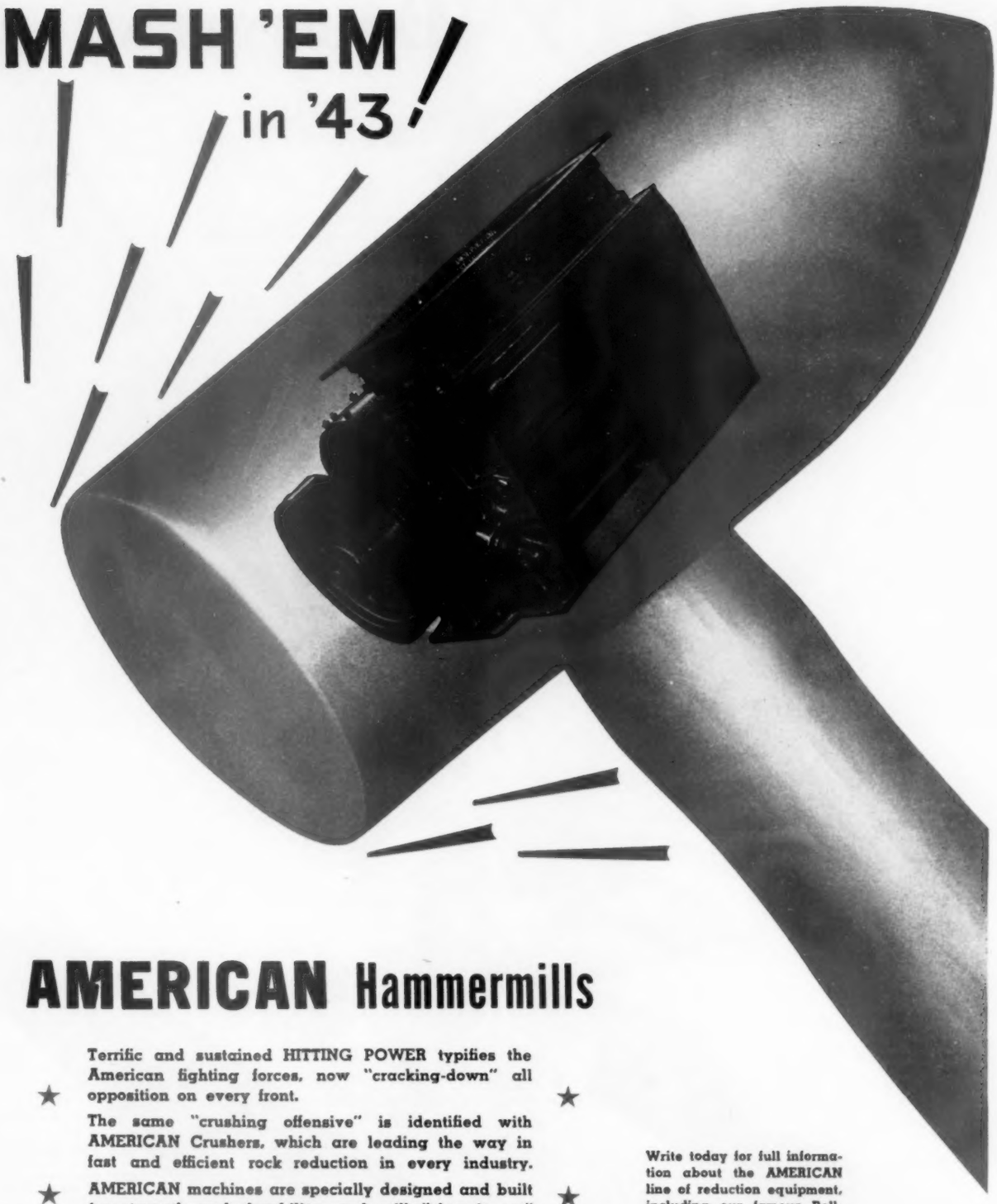
OLDEST AND LARGEST BUILDERS OF HAMMERMILLS IN THE WORLD

WILLIAMS

PATENT CRUSHERS GRINDERS SHREDDERS

SMASH 'EM in '43!



AMERICAN Hammermills

★ Terrific and sustained HITTING POWER typifies the American fighting forces, now "cracking-down" all opposition on every front. ★

The same "crushing offensive" is identified with AMERICAN Crushers, which are leading the way in fast and efficient rock reduction in every industry.

★ AMERICAN machines are specially designed and built for strength and durability, and will "slug it out" against the toughest rock ever quarried. ★

★ "AMERICANS" combine extreme economy in performance with high product uniformity and are always reliable for top-tonnage figures—10 to 100 tons per hour. ★

Write today for full information about the AMERICAN line of reduction equipment, including our famous Rolling Ring Crusher.

AMERICAN PULVERIZER COMPANY

1283 Macklind Avenue St. Louis, Mo.

EAGLE EQUIPMENT

in War ★ in Peace

War is demanding a continuous and expanding supply of high quality sand and gravel to meet urgent military requirements.

EAGLE engineers have sponsored and guided the major developments in this material processing field.

Our experts are now in a position to recommend EAGLE machines and methods for increasing production and operating economy in plants that are not yet equipped for "all out" efforts.

As an example, EAGLE Washers were considered "the" equipment for securing clean, low-priced aggregate during many years prior to the present crisis.

Now, EAGLE Washers are proving of equal value in raising the production level of an indispensable war-time construction material.

The new EAGLE Dewaterer. Recommended for products of extra low moisture content and retention of fines.

The new EAGLE Paddle Washer. Recommended for medium capacity plants where clay is a problem.

Write for our Bulletin No. 41, describing the EAGLE complete line of sand and gravel processing machinery

EAGLE IRON WORKS

DES MOINES, IOWA

What steel company made cannon balls for George Washington's Army?

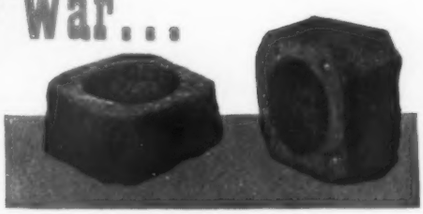
We've Helped to Arm America for Every War...

WHILE the Taylor-Wharton Iron & Steel Company derives greatest satisfaction from its constructive peacetime contributions to metallurgy, its history reveals a unique record of service to America in wartime.

In 1775, the original company, Union Iron Works, turned its full capacity to the production of cannon balls, pig and fabricated iron to help the colonial patriots win America's freedom.

Again in the War of 1812—Mexican War of 1846—Civil War—Spanish-American War—World War I—and now, in World War II—the predecessors and present company have enlisted their facilities in America's cause.

With an unbounded faith in America's strength and future—based upon 200 years growth with her—we are exerting every effort to the preservation of the freedom we helped to win.



Original molds used to cast cannon balls for the Continental Army, 1775-1781.

Left: Tisco Manganese Steel Tank treads for World War I and II.

• • •

Right: 155 m.m. shells for U. S. Army in present war.

Taylor-Wharton Products

•

Manganese Steel Castings
Alloy Castings and Forgings
High Pressure Gas Cylinders
Manganese-Nickel Welding Rod
Alnico Permanent Magnets
Special Trackwork

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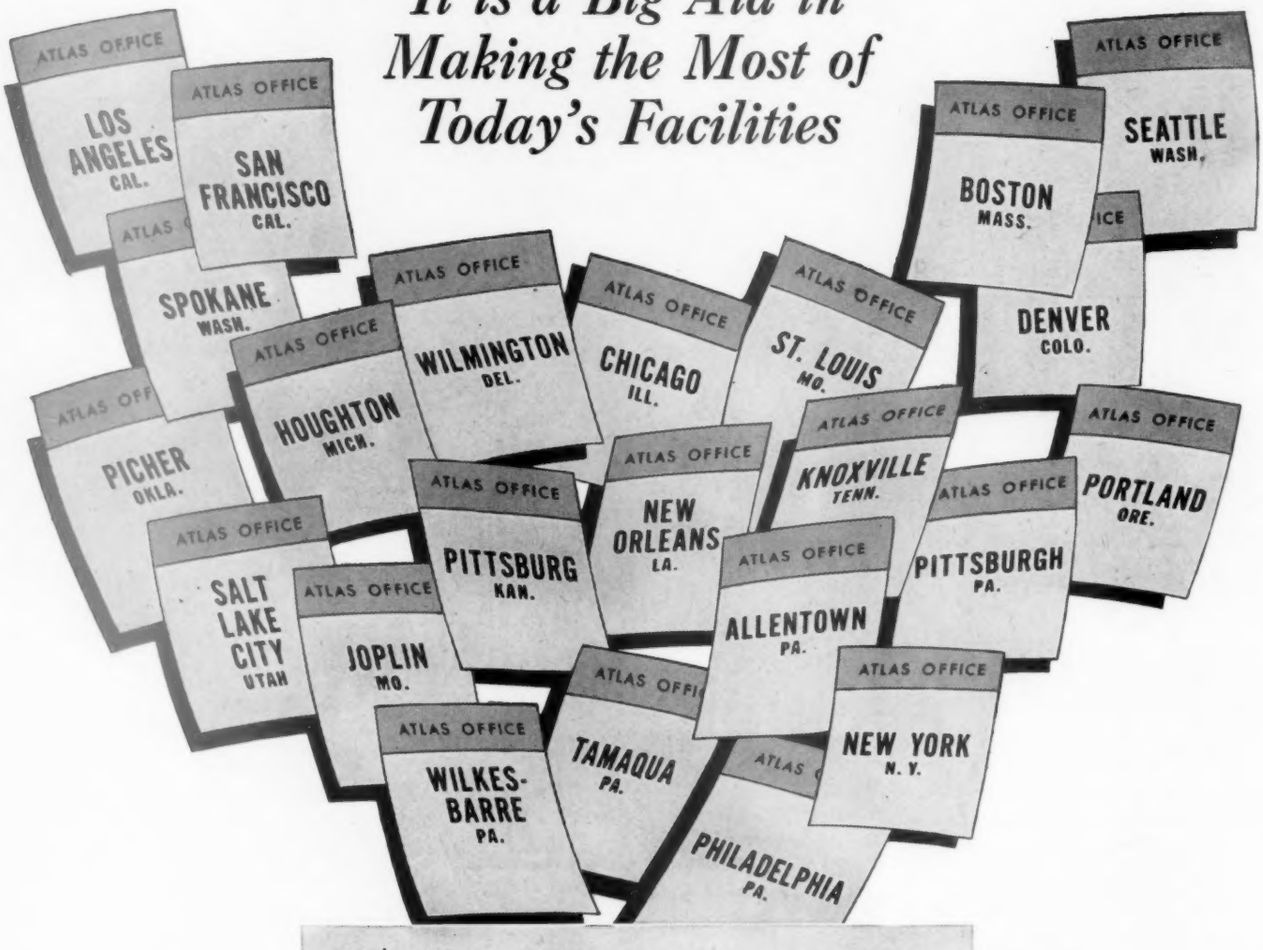
Taylor-Wharton Iron & Steel Co.

HIGH BRIDGE, NEW JERSEY • EASTON, PENNSYLVANIA

When the Helping Hand is Near At Hand–

It is a Big Aid in Making the Most of Today's Facilities



ATLAS sales offices and distribution points are conveniently located throughout the country. There are ten explosives manufacturing plants located for efficient service. Atlas representatives are ready to aid in licking explosives problems, involved in construction, mining and quarrying. It is remarkable what cooperation can accomplish. Let the Atlas representative prove it to you.

ATLAS EXPLOSIVES

"Everything for Blasting"

CHEMICALS ATLAS EXPLOSIVES

ATLAS POWDER COMPANY, Wilmington, Del. · Offices in principal cities · Cable Address—Atpowco

This Simple Idea . . .
is SAVING BELTS
for *Industry*. . . and Rubber for the *Nation*

To see for yourself the belt-saving importance of the CONCAVE SIDE, just pick up *any* V-belt and bend it as it bends when it goes around a pulley.

As the belt bends, grip its sidewalls firmly with your fingers as in the photograph above. You will feel the sides of the belt *change shape*. If the sides were straight before bending, they will *bulge outward* as the belt bends. (See Figure 1 on the right).

Now look at Figure 2. Here you see how bending changes the shape of a belt that is built with the patented Concave Side. The side becomes perfectly *straight*. This belt, when bent, precisely fits its sheave groove. Here are the savings:—(1) There is no side-bulge. This means *uniform* wear—*longer* life—a saving in belts for you, a saving in rubber for the Nation. (2) The full side-width of the belt uniformly *grips* the sheave groove wall—carries heavier loads without slippage—another saving of belts and a saving in power, too!

Only belts built by Gates are built with the Concave Side, a Gates patent.

What Happens When a V-Belt Bends

FIG. 1

FIG. 2

THE GATES RUBBER COMPANY

Engineering Offices and Stocks in All Large Industrial Centers

GATES VULCO ROPE DRIVES

Chicago, Ill. 549 West Washington
New York City 215-219 Fourth Avenue
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Dallas, Tex. 2213 Griffin Street
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San Francisco, Cal. 2700 16th Street

How Gulf Lubrication Service Engineers are giving effective help to quarries and cement plants

Increased production... "Some time ago we adopted a lubrication policy that has resulted in a considerable increase in production," says a quarry Superintendent. "First we called in a Gulf Lubrication Service Engineer and standardized on the quality lubricants and application methods he recommended. Then we put into effect close supervision of our lubrication to make sure Gulf Engineering recommendations are carried out. As a result, we get better performance from our equipment and avoid unnecessary production delays, which add up to greater output."

Increased production... "We produce more tons per hour since we adopted the lubrication practice recommended by a Gulf Lubrication Service Engineer," says a quarry Superintendent. "This increase in production is due to more efficient equipment performance and a reduction in delays caused by excessive wear."

Tough maintenance problem solved... "Before we adopted the recommendations of a Gulf Lubrication Service Engineer, our finish tube mill drive represented a tough maintenance problem," says a cement mill Foreman. "Bearings ran hot and occasionally failed, causing a shutdown of the mill. Now bearings run cool and are no longer a source of trouble."

$5,000 a year saved... "Our big jaw crusher gave us a lot of trouble from the first day it was installed—until we called in a Gulf Lubrication Service Engineer and followed his recommendations," says a crusher plant Superintendent. "The main bearing had to be replaced every three months at a total cost of over $5,000 a year. With Gulf H. M. Grease and a change in the grooving of the bearing—as the Gulf engineer advised—we put an end to this expense, and there are still no signs of bearing failure after over a year of trouble-free service."

More profitable quarry and plant operation... "Our records show that over a period of years our quarry and plant have operated at a larger profit with the quality lubricants and application methods recommended by a Gulf Lubrication Service Engineer," says a General Superintendent. "By helping us avoid excessive wear and mechanical delays, they have played a large part in keeping tons per hour up and maintenance costs down."

GULF OIL CORPORATION · GULF REFINING COMPANY · PITTSBURGH, PA.

Call in a Gulf Lubrication Service Engineer to help improve your production

GULF INDUSTRIAL LUBRICATION

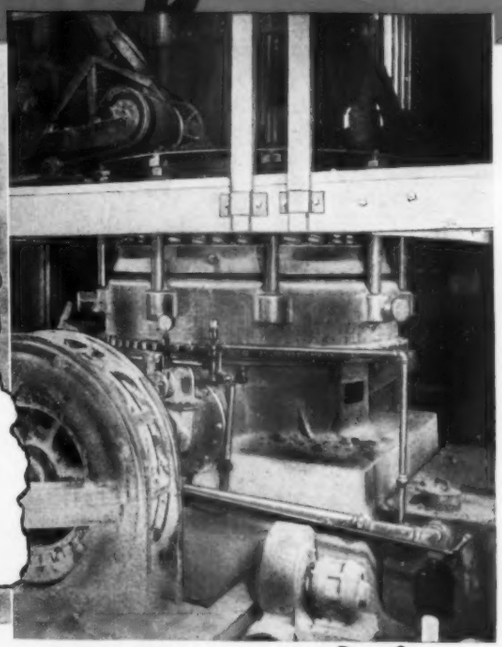
THESE THREE SABOTEURS *failed!*

"We are sending you under separate cover, one eight pound hammer head and two picks which passed through our Secondary Crusher on Sept. 18, 1942, without apparently doing any damage.

This is such a remarkable demonstration of the power and efficiency of your 48" TELSMITH Gyrasphere Secondary Crusher, that we feel you should have these specimens as proof of the statement. This machine at the time was set for one-half inch discharge, which makes the demonstration more remarkable.

We get a large percentage of tramp iron * * * In the past this was a source of grave trouble but since installing your machine tramp iron doesn't bother us."

NAME ON REQUEST



they didn't even stop this

TELSMITH

Gyrasphere SECONDARY CRUSHER

A silent, skulking saboteur—Tramp Iron constantly menaces your production. Get the insurance against shut-downs of Telsmith's *spring relief*. The crusher's concave bowl is backed by heavy springs, adjustable as to compression. When tramp iron gets in, it causes undue pressure in the crushing bowl. The springs let the concave bowl *tilt* at the point of stress. The pressure is relieved. The concave resumes its normal position. Crushing goes on as usual. The same relief is afforded when crusher bowl is packed by fines. This means a greatly increased capacity in fine crushing, continuous operation and minimum upkeep. *For the whole story, get Bulletin Y-15.*

Y-3

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There must be a reason!

PMCO

WELDED DIPPER SALES

have SKYROCKETED to all time high–

1942 SALES TWENTY TIMES 1938

INCREASES SHOVEL CAPACITY UP TO 30%

PETTIBONE MULLIKEN CORPORATION

Established 1880

4710 West Division Street, Chicago, Illinois

Keeping a Time Honored Tradition Alive

and Making the New Year a Living Issue

Again, the time is at hand, when that wholesome American custom, of extending Greetings and New Year's Wishes, is observed by men of all stations and walks of life. It is a time of goodwill that springs from a spirit, grateful for the things we have and enjoy as a liberty loving people. And, it is a time of inventory and resolve—when the worn page of the past year is reviewed, turned and a new one greets us as we make a fresh start.

While endeavoring to look ahead, the year 1943 takes on a new significance. Heartened by what our armed forces are doing, we as a Nation have been spurred to greater action. And many of us, now more than ever, are striving to match the valor and sacrifice of our boys, so that throughout the coming year we can be happy in the thought of jobs well done—jobs that will hasten early victory and preserve that which we cherish and hold dear.

It is in this spirit, coupled with a desire to be of the greatest possible service, that we and all Austin-Western Distributors extend to you and yours our wishes for health and success, here at home as well as abroad.

THE AUSTIN-WESTERN ROAD MACHINERY CO.
Aurora, Illinois, U. S. A.
Distributors in Principal Cities • Cable Address: Awco, Aurora

Austin-Western

WITH SERVICE DOUBLY IMPORTANT during the duration, you will find Austin-Western Distributors and their Staffs ready and willing to give you all possible help and cooperation. The flag markers on the map indicate nearby service and spare part headquarters throughout the United States.

PULLING WIRES FOR PEACE!

Mile after mile of wires are being processed to speed the war effort and to hasten peace.

Day and night, the finest of steel passes through scientifically-controlled patenting furnaces, steaming vats that clean and coat, and baking ovens that dry and degasify. With unrivalled skill, through dies of jewel-like precision, it is drawn down to wire.

With scarcely a pause, spools of it in great numbers are cradled in the awesome whirr of robot-like stranding and laying machines. There, just as steadily as they were drawn down, wires are laid up again, first into strands and then into rope. In each process, strength is gained to supply tough, flexing sinews for machines which multiply and quicken man's capacity ten thousandfold.

As never before, with ever-increasing skill, our craftsmen are producing tough steel tendons for fighting machines. Before there can be war machines, however, ores, oil, coal and stone must be mined. Steel and metals must be made, lumber logged, war plants constructed and fitted. Then there must be highways, seaports and airports hewn out of the earth around the globe.

Think! Try to imagine what a limitless, hopeless, man-killing job it would be without modern wire rope to do the digging, shoveling, hoisting and countless other burdensome tasks. Then resolve to use your wire rope with great care.

UNION WIRE ROPE CORPORATION
2132 Manchester Ave., KANSAS CITY, MO.

Tulsa • Houston • Chicago • Salt Lake City • New Orleans
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C-43

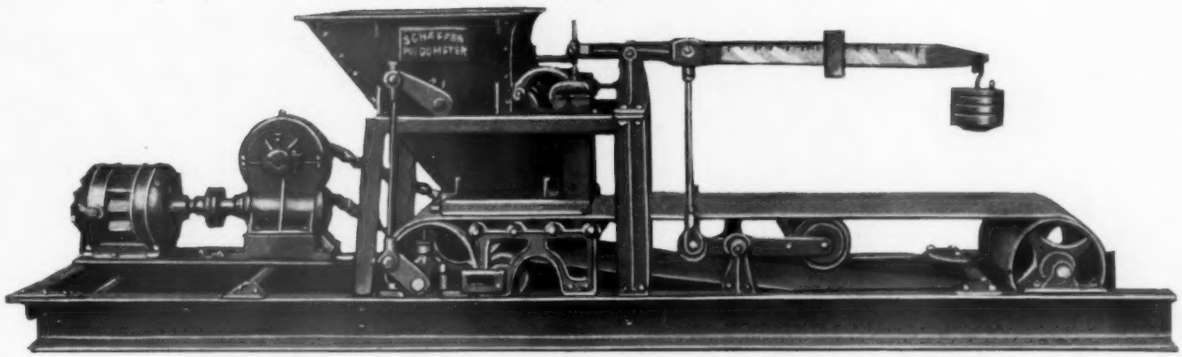
SEND FOR ROPE DOPE • Tells how to make wire rope last longer—how to handle and install it—how to socket or splice—and a wealth of other helpful information. Engineering information supplied without obligation.

WHEN YOU NEED PREFORMED WIRE ROPE
SPECIFY **union-formed**

union *Wire Rope*

"THE ULTIMATE LOW COST WIRE ROPE"

KEEP YOUR
POIDOMETERS
IN GOOD CONDITION



INSPECT AND SERVICE
SCHAFFER POIDOMETERS
REGULARLY

IT'S ECONOMICAL—**IT LENGTHENS THE LIFE, LOWERS DEPRECIATION AND OPERATING COSTS AND INCREASES PROFITS.**

IT'S EFFICIENT—**POIDOMETERS OPERATE AT MAXIMUM EFFICIENCY AND ACCURACY WHEN IN TOP CONDITION.**

IT'S PATRIOTIC—**WELL CONDITIONED POIDOMETERS DO A BETTER JOB—LAST LONGER—REQUIRE FEWER REPAIRS—THUS RELEASE VITAL MATERIALS FOR OTHER WAR MACHINES.**

For Proportioning Information Write for Catalog No. Five

SCHAFFER POIDOMETER COMPANY
2828 Smallman St. **Pittsburgh, Pa.**

TRY THIS!

and prove to yourself that BEMIS MULTIWALL PAPER BAGS can take rough handling

FILL a Bemis Multiwall Paper Bag with cement. Throw it on a truck—stack other bags on it—give it "the works!" (Better get a big husky truck driver to do it for you because you'll get pretty tired before the bag breaks.)

This experiment will prove to you that Bemis Multiwall Paper Bags for cement can take rough handling in the shipping room . . . in transit . . . on the job.

This extra toughness saves lost time on the production line, too, because it reduces breakage to a minimum.

And, remember, toughness is only *one* quality of Bemis Multiwalls. They are showerproof. They are economical. And the clean-cut printing of your brand makes them effective salesmen.

We suggest you try this experiment before you place another bag order. We'd like to have you know about Bemis Multiwall Paper Bag quality. Sample bags for the trial will be sent upon request . . . free and without obligation.

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East Pepperell, Mass. • Peoria, Illinois • San Francisco, Calif.
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FOR "OUTSTANDING ACHIEVEMENT"

THE U. S. MARITIME COMMISSION

Has Awarded to the

SUPERIOR ENGINE DIVISION

of The National Supply Company

THE VICTORY FLEET FLAG ★ THE MARITIME "M" PENNANT

AND THE MARITIME MERIT BADGE...

To the men and women of *Superior* in recognition of the speed and excellence of their production that won for us this citation of achievement.

SUPERIOR DIESEL POWER

DEPENDABLE

ASHORE AND AFLOAT

Barber-Greene Representatives
AT YOUR SERVICE

B-G representatives can be of valuable assistance to you during the present emergency. **PARTS** Many carry in stock the B-G repair parts most frequently required. Others can assist you in ordering parts. **MAINTENANCE** They will gladly advise you on general maintenance. Many are equipped to bring your machine in and completely overhaul it. **RENTAL** B-G representatives are glad to assist you in locating machines for rental or will assist you in renting a machine which you have idle. **ENGINEERING SERVICE** Your B-G representative will gladly give you the benefit of his experience in any proposed changes in your material handling layout. **NEW MACHINES** New Barber-Greenes are not available except on very high priority. If you are planning a job which will carry such a priority, your B-G representative will give you every possible assistance.

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42-4

Clippers for Victory!

All of the Buckeye Clippers coming off the assembly lines these days are going into vital war construction, near and far, for Uncle Sam. So—in a way—they are working for you fellows who could use a Clipper or two at this time, as well as for a lot of folks who have no direct need for one.

GET SCRAP HAPPY

One way we can all help our war effort and get real satisfaction from it is to help round up all available scrap and get it to the mill. IT'S NEEDED NOW. Electro-magnet equipped Clippers are doing their part at yards and mills.

Clipper's Vacuum Power Control, which gets more yards handled daily—the control that is unhampered by any weather—is helping speed the day of Victory. With a lot of engineers, contractors and operators on war work, who have had an opportunity to see what the Clipper can do when put to the test, it will be Clippers for them from now on!

BUCKEYE TRACTION DITCHER CO. - FINDLAY, OHIO

Built by Buckeye

Convertible Shovels

Trenchers

Tractor Equipment

R-B Finegraders

Road Wideners

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HAS COST INFLATION HIT YOU TOO?

If you're loading any material by hand, you probably are concerned with cost inflation—most firms are. If you will give the Dempster-Dumpster system of hauling serious consideration — learn just how it works by simply asking us for our complete operating manual, you'll discover that you can eliminate the majority of your present high costs of hauling and dumping in a most convincing way.

What would it mean in savings if you eliminate three-fourths of your trucks—savings in tires, gas, labor and standing idle time? Such savings are no idle dream, because it's just what is happening in many operations where the Dempster-Dumpster system is working now.

One Dumpster Hoisting Unit, mounted on one of your present trucks, and a number of Dumpster bodies can do the work of several conventional trucks, depending on the length of haul and conditions in your plant. While one loaded body is being hauled and dumped, other bodies are being filled. These waist-high bodies permit greater production by men with much less energy. No time is wasted, truck and driver are kept busy . . . the most effective and efficient system you've ever seen.

Don't say—"It won't work in my case"—because there's a Dempster-Dumpster body built to suit any job, whether it be liquid, dust or the heaviest type of material. Investigate the Dempster-Dumpster now. Write for our illustrated manual at once. Dempster-Brothers, Inc., 113 Springdale, Knoxville, Tennessee.

DEMPSTER DUMPSTER

KEEP PRODUCTION ROLLING

with

STURTEVANT

Machines for

CRUSHING
GRINDING
PULVERIZING
GRANULATING
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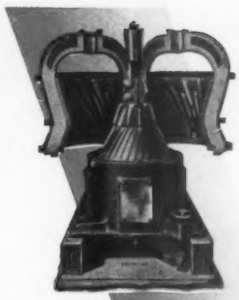
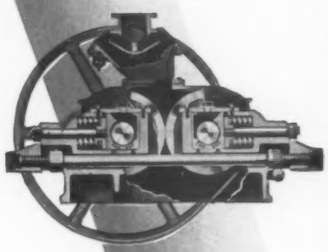
ELEVATING
CONVEYING



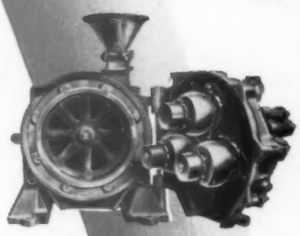
Rotary Fine Crushers
for reduction to 1" and ¼". For soft or moderately hard materials.

Moto-Vibro Screens
accurately size anything screenable. Open and closed types. Any capacity.



Crushing Rolls
for granulation, coarse or fine, hard or soft materials. Crushing shocks balanced.

Dry Batch Blender
for intimate blending. Single intake and discharge opening. Large output. Simple, compact, easy running.



Ring Roll Mills
for medium and fine reduction (10 to 200 mesh) hard or soft materials. Durable, low power needs.

Swing-Sledge Mills
for medium and coarse reduction (1" to 20 mesh). Handles soft, medium hard, tough or fibrous materials.

STURTEVANT Air Separators

will help power the 1943 drive for greater production of finely sized materials.

The STURTEVANT features positive particle size control, lowered temperatures, and high uniformity of product in the range of 40 to 350 mesh and micron sizes.

This is a compactly designed, rigidly constructed machine, with large feed openings and easy adjustments. Operated in a closed circuit with the pulverizer, it increases capacities from 25% to 300%, with power savings of 10% to 50%.

317

317—STURTEVANT Air Separators are now boosting output records in the cement industry alone. All were accepted on approval, with no rejections.

Hundreds of other STURTEVANTS are performing equally as well for producers of Clay, Talc, Gypsum, Soapstone, Ceramics, Refractories, etc.

Write for Information

STURTEVANT MILL CO. HARRISON SQUARE **BOSTON, MASS.**

Against the sky . . . a tiny V winging toward the rising sun.

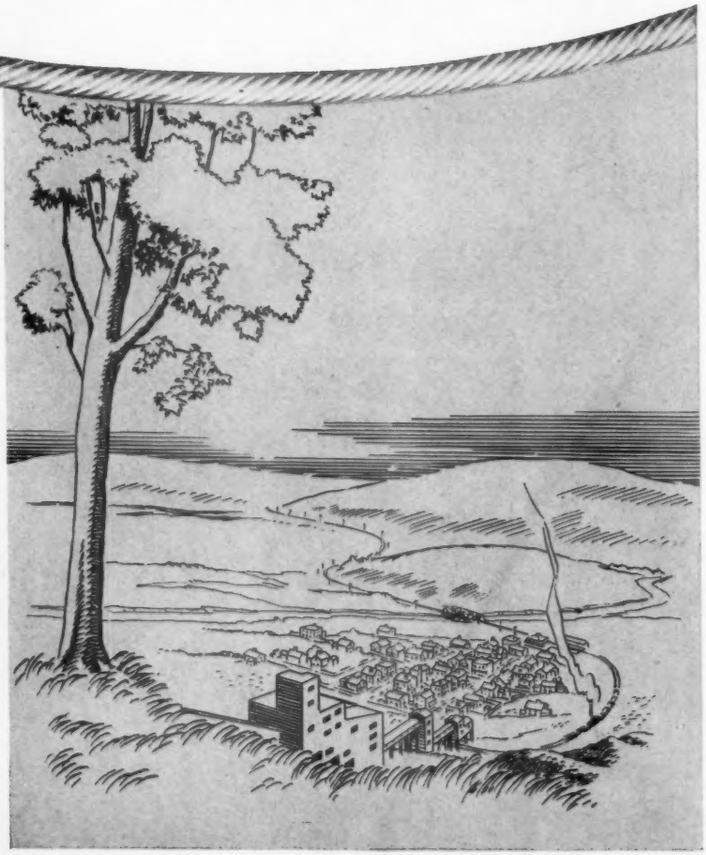
Far below . . . a small group of buildings, nestling in the Valley.

And deeper yet, in Earth's massive rock . . . a mine.

Partners in Victory. For the battle five miles up can be won in the mine one mile down, where coal or iron or copper or lead or silver . . . are blasted out of the earth.

It may be an open pit, where the pattern of smoke from a hundred holes tells the story of Primacord—the detonating fuse that is saving powder and man power—and promoting safety—wherever large blasting is done.

Five miles up and one mile down



It may be a mine deep in the rock: men working in the light of their lamps, drilling blast holes . . . charging . . . igniting the rounds of Ensign-Bickford Safety Fuse.

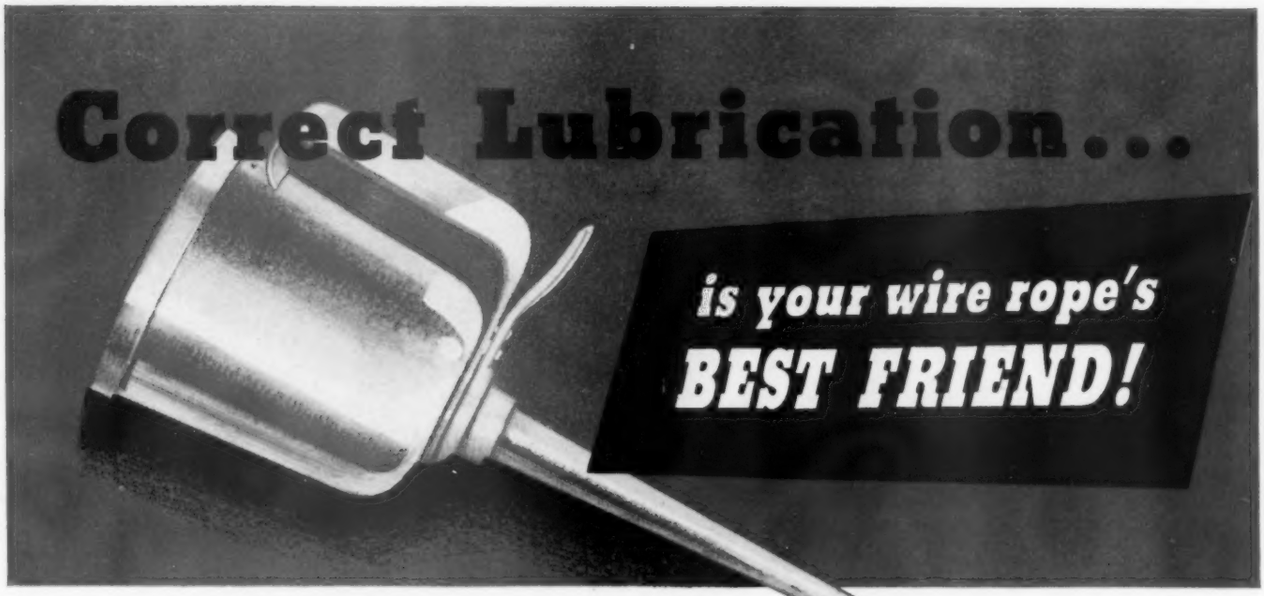
Is this war work? Yes! For *Victory begins underground,* and blasting has a new responsibility, a new purpose: to provide more and *more* and MORE of the coal and the metal with which a war is won. The Ensign-Bickford Co., Simsbury, Conn.

Ensign-Bickford

Safety Fuse
Since 1836

Primacord-Bickford
Detonating Fuse

Correct Lubrication...



If wire ropes are to give their best service—yes, even longer-wearing HAZARD LAY-SET PREFORMED—they must be lubricated regularly—and correctly. Not only will proper lubrication protect the many wires from corrosion and excessive wear, but will permit the internal wires which move one against another when the rope passes over a sheave or winds on a drum, to slide more freely and with less friction. For some short-lived services, factory lubrication is sufficient. For others, additional lubricant must be added in the field, and unless this is done with sufficient frequency, your wire rope is doomed to fail before its proper time. And this is no time to waste steel.

HAZARD LAY-SET PREFORMED WIRE ROPE ordinarily gives so much better, easier-handling, longer service than ordinary non-preformed rope that occasionally operators take its exceptional qualities for granted and forget the oil can. Don't do it. Lubricate your LAY-SET correctly, and you will get even *longer* service—even *greater* dollar value. All Hazard ropes identified by the Green Strand are made of Improved Plow Steel.

HAZARD WIRE ROPE DIVISION Wilkes-Barre, Pa., Atlanta, Chicago, Denver, Fort Worth, Los Angeles, New York, Philadelphia, Pittsburgh, San Francisco, Tacoma
AMERICAN CHAIN & CABLE COMPANY, INC. Bridgeport · Connecticut

● IMPORTANT SUGGESTIONS

Clean wire rope thoroughly before lubricating. Use kerosene and wire brush.

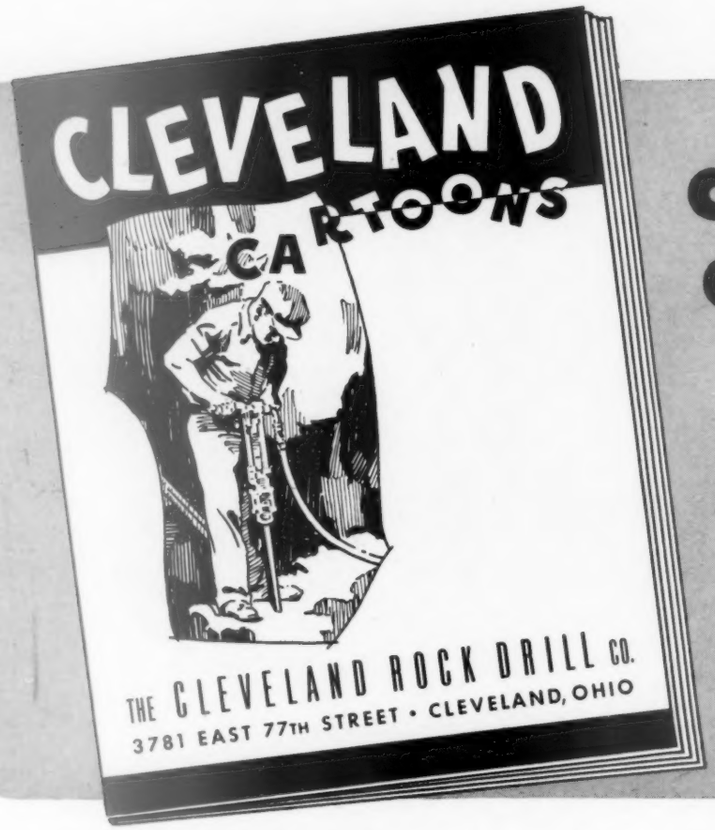
Passing the rope through high-pressure jetted steam has proved a very effective means of cleaning, especially larger diameters.

Wipe off excess lubricant.

Frequent lubrication with light-bodied lubricant is better than infrequent treatment with heavier lubricants.

Lubrication of any wire rope is sufficiently important to warrant calling in one of the industrial lubrication men employed by oil companies or a Hazard man. These men can tell you which lubricant will handle your problems best.

HAZARD LAY-SET *Preformed* WIRE ROPE



CLEVELAND CARTOONS tell how to keep rock drills *on the Job*

IT'S *FREE* write for a copy

THIS booklet of Cleveland Cartoons presents, in an amusing style, useful hints on proper rock drill maintenance. It tells you and your men what you can do to get more work out of your tools with minimum expense for repairs and compressed air. Your men will enjoy the practical, down-to-earth style of these cartoons. It covers many important phases of operation such as lubrication, dull drill steels, worn chucks, cleaning, etc.

We have already received requests for thousands of copies of Cleveland Cartoons. In the interests of efficient wartime operation, write *now* for your *free* copy.

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BUY U. S. WAR BONDS AND STAMPS

A TYPICAL CLEVELAND CARTOON

DON'T USE DULL DRILL STEELS—When the bit, from wear or improper sharpening, loses its gauge, it will no longer be free in the hole and the blows of the hammer wedge it tightly, greatly slowing up, if not entirely stopping the progress of the drill. Never use dull steel. You get no drilling to speak of, and you put your machine in the repair shop besides.

The CLEVELAND ROCK DRILL CO.

Subsidiary of The Cleveland Pneumatic Tool Company

CABLE ADDRESS: "ROCKDRILL" • CLEVELAND, OHIO

LEADERS IN DRILLING EQUIPMENT

SO SIMPLE IT'S UNBELIEVABLE...

Just put a Tamptite cartridge of Hercules dynamite in the bore hole. Then tamp in the usual way.

Presto, the charge is compacted *inside the wrapper*, concentrated to get better breakage.

No slitting of cartridges =
Time saved in preparation.

No messy spilling of powder =
Time saved in loading.

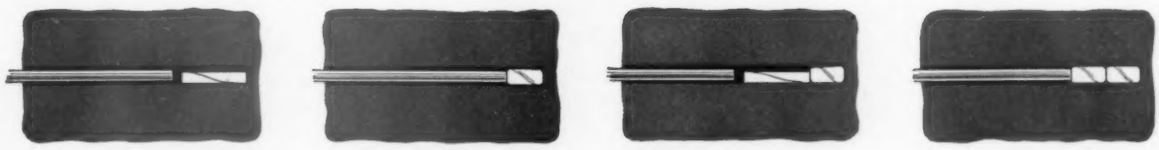
No air space around dynamite =
Time saved in handling blasted material because of better breakage.

Any way you add it up, Tamptite saves time. And *time saved* means *increased output* in any language. Ask Hercules for Tamptite cartridges on your next dynamite order.

•

HERCULES POWDER COMPANY
INCORPORATED
960 KING STREET • WILMINGTON • DELAWARE

A QUICK LOOK AT TAMPTITE IN ACTION!



The regular-size cartridge goes in the bore hole. Note the space to be filled.

Pressure from the tamping rod compresses the powder to fill the space.

Another cartridge goes in—Compaction takes place inside the wrapper.

The charge is concentrated for better blasting results.

A-84

PIT AND QUARRY

Vol. 35 JANUARY, 1943 No. 7

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PIT AND QUARRY IS INDEXED IN THE ENGINEERING INDEX

SUN LUBRICANTS

"help hammer mill bearings last from 4 to 8 times longer"

Bang! Crash! Bang! Day in day out, every day — never before has such a demand been put on stone crushers, hammer mills and other cement making equipment. And today a breakdown anywhere along the line means less vital material for building war plants . . . defense bases . . . and other important points in our war effort.

What to do to keep equipment on the job and producing more than ever before? Take a tip from one large cement plant that switched to SUN LUBRICANTS.

With competitive lubricants this plant had to replace bearings on a hammer mill at the rate of a new set for every 150,000 tons processed. Then they took the advice of a Sun Oil Engineer — one of those Doctors of Industry — and changed to SUN E.P. Lubricants. Now they are able to make the same bearings last long enough to process well over a million tons of stone.

In these days your hours of useful production are invaluable . . . many of your machines are not replaceable — protect them both with performance-proved methods of lubrication. Put the efficiency of your equipment in the able hands of a Sun Oil Engineer. He's ready . . . willing . . . and able to help you keep your machines on the job and producing without breakdowns or delays. Get in touch with your local Sun office . . . or write

SUN OIL COMPANY • *Philadelphia*

Sun Oil Company, Ltd., Canada

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SUN PETROLEUM PRODUCTS *HELPING INDUSTRY HELP AMERICA*

Long the Leader . . . Ever a Pioneer

. . . . Mister Edison was having trouble

IT WAS back in 1891. Thomas A. Edison had invented a magnetic separator for the concentration of low grade iron ore. He had also created new processes for crushing and briquetting the ore. Now, all he had to do was start production.

But he ran into unexpected difficulties. Not with the separator, or the crusher, or the briquetter. His problem concerned something extraneous . . . but essential. He had conveyor trouble. He had expected to use the only types of conveyors then current: scraper and gravity bucket. Neither of these had ever been called upon to handle abrasive materials (which had always been moved in cars) or to attain the required speed (200 TPH). They failed completely.

Mr. Edison next tried a daring experiment. He used a *belt* conveyor. Up to then, belt conveyors had been restricted to carrying grain. They were thin, had no special cover, and were run flat on wooden idlers. Naturally, they wore out quickly. Another experiment seemed doomed to failure.

The First Belt Made Especially for Conveying Materials

ABOUT that time, a man named Thomas Robins called on Mr. Edison. Being a salesman for a rubber company—and, himself, a pioneering spirit—he was interested in this attempted new use for a rubber product.

After looking over the plant and analyzing the handling problem, Mr. Robins believed that a conveyor belt could be created specifically for the purpose.

In fact, Mr. Robins astonished the great inventor and his colleagues by stating that a piece of rubber, when exposed to the heavy falling stream of crushed ore, would outlast many times its own thickness of the hardest steel. What was more, he could prove it.

Then Mr. Robins ran into difficulties. The company he represented would have nothing to do with such a "crack-brained" idea. But he persisted and finally found a concern willing to produce a belt to specifications. Thus was created the first belt made especially for conveying materials.

From that humble beginning and single idea has grown the present firm of ROBINS . . . long the leader, ever a pioneer in modern materials handling machinery. Submit *your* problems to ROBINS.

ROBINS

CONVEYING BELT COMPANY

PASSAIC • N. J.

For Material Aid in Materials Handling...It's ROBINS

PIT AND QUARRY

CHICAGO JANUARY, 1943

NLRB Issues Call for Union Election at Virginia Plant

The National Labor Relations Board has called for an election among Virginia employes of the Lone Star Cement Corporation to determine whether they wish to be represented by Local 191 of the United Cement, Lime & Gypsum Workers International Union, an AFL affiliate.

Production and maintenance employees at the company's quarry at Chuckatuck and at its plant in South Norfolk will be eligible to vote. The NLRB said the unit appropriate for collective bargaining also would include all hourly paid laboratory workers, but exclude all supervisors, clerical and salaried laboratory employes.

The board said Local 191 claimed a majority of employes who said they had severed a relationship with the International Union of Operating Engineers with whom the company held a contract expiring last August 6.

The NLRB said the company took "the position that an existing contract with the operating engineers precluded it from recognizing any other labor organization and expressed the desire that the question of representation of its employees be settled by the board."

A field examiner said there were approximately 127 employes in the bargaining unit on October 3. The election is to be held "as early as possible."

Eagle-Picher Acquires Wool Plant in Indiana

Sale of the Union Rock Wool Company property at Wabash, Indiana, to the Eagle-Picher Lead Company, Cincinnati, has been announced. Negotiations for purchase of the plant, said to be the oldest rock-wool plant in Indiana, were started several weeks ago.

The Union Rock Wool Company plant originally was opened in 1927 as the Union Fibre Company. In 1941, the plant was rebuilt following a disastrous fire.

Vulcanite Quits Cement Field; Plant for Sale

The Vulcanite Portland Cement Company has decided to retire from the cement-manufacturing business and is now in the process of winding up its business affairs, according to Vice-President George P. Todd.

The plant at Vulcanite, New Jersey, is to be sold in its entirety.

Coming Events

CONVENTION CANCELLED

The annual convention of the National Crushed Stone Association, scheduled for January 26-28 at Cleveland has been cancelled. The National Sand & Gravel Association and National Ready Mixed Concrete Association conventions will be held as scheduled below.

January 27-29, 1943—Cleveland, Ohio. Annual convention, National Sand & Gravel Association, Statler Hotel. (No machinery exhibit.)

January 27-29, 1943—Cleveland, Ohio. Annual convention, National Ready Mixed Concrete Association, Statler Hotel. (No machinery exhibit.)

February 16-17, 1943—Chicago. Annual convention, National Concrete Masonry Association, Sherman Hotel. (No machinery exhibit.)

1943 Construction Volume to Be About Half That of 1942

Construction contracts now indicated for 1943 should equal or better the volume of 1940, the latest year when peace-time activity was predominant. This is the opinion of F. W. Dodge Corporation, after careful review of current curtailment orders of W.P.B. and of government estimates for 1943 activity. Such a volume would exceed somewhat the average annual volume of the twenty years 1920 through 1939.

The concern estimates the total 1943 building and engineering contract volume for the 37 states east of the Rocky Mountains at $4,035,000,000, compared with an estimated 7,915,000,000 for the calendar year 1942. While the indicated decline is 49 per cent. it is pointed out that it will be a decline from this year's record volume of all time. Non-residential building volume is estimated to decline 53 per cent. in dollar volume; the largest percentage decline in this general category is indicated for industrial buildings, but the estimated $900,000,000 for 1943 industrial construction is much larger than the volume of any peace-time year. Residential building is estimated to decline 44 per cent. in dollar volume, and heavy engineering construction 47 per cent.

Commenting on these advance estimates, the statement says: "We believe these figures may safely be regarded as *minimum* figures. It is always the preference of F. W. Dodge Corporation in putting out advance estimates to err on the low side rather than on the high side. Furthermore, the estimates are being made at a time when all emphasis is being placed on curtailment of construction. It is quite conceivable that the process of curtailment may

"squeeze out" projects which will later prove essential and may not fully provide for all the new needs that may arise during 1943. In particular, war-housing needs are considerably greater than the figures shown in these estimates. While it is doubtful whether all the housing desired for in-migrant workers will be provided, there will be a constant pressure of new requirements demanding new allocations of materials for housing purposes. No relaxation of restrictions on non-war construction appears likely.

"In general, the number of very large projects (running into the tens of millions of dollars) is apt to be small in 1943, as compared with the numerous huge projects of 1941 and 1942. The bulk of the year's program will consist of moderate-sized projects; relatively few large industrial plants, cantonments, bases and supply depots; many new units added for expanding existing large projects."

Welder Sparks Start Fire at Gravel Plant

Sparks from an electric welder ignited an overflow of gasoline and started a fire that caused an estimated $8,000 loss at the Battle Creek Gravel Company's No. 2 plant, three miles north of Battle Creek, Michigan, on December 2.

The flames, fed by gasoline and two drums of alcohol, spread rapidly, destroying a 25 by 50-foot repair shed, a new electric-generating plant, one truck, welding equipment, a number of tires and many tools.

Fischer Will Provides for Firm's Preservation

Distribution of the $1,000,000 estate of the late W. W. Fischer, head of the Fischer Lime & Cement Company at Memphis, who died November 2, was provided for in a 27-page will admitted to probate November 9, before Judge Sam O. Bates of the probate court.

The bulk of the estate, after several bequests that include donations of $500 to each of four charitable institutions, is set up in a trust fund with instructions that the trustees remember that the "preservation and maintenance" of the Fischer Lime & Cement Company is the "cardinal principle" to be followed.

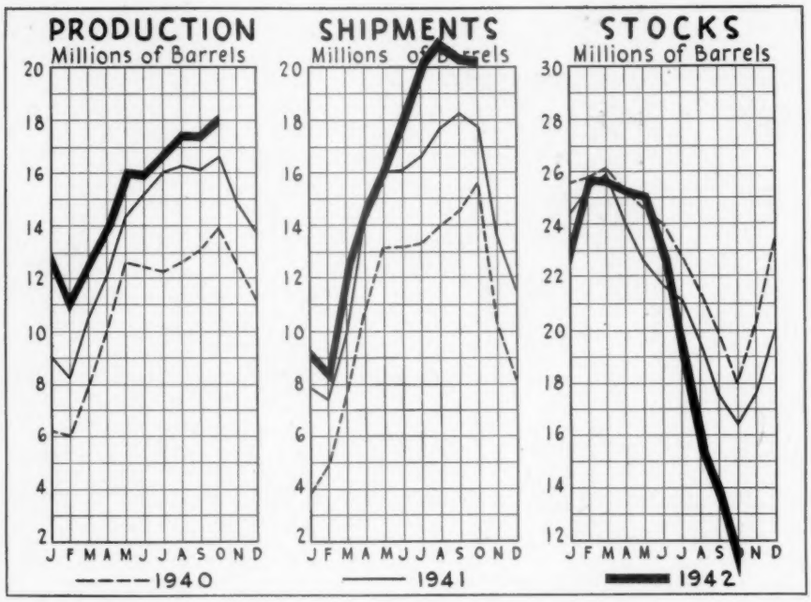
"My trustees are authorized and empowered to sell or otherwise dispose of any other asset of my estate in order to preserve and maintain said Fischer Lime & Cement Company," the will read.

Paid Circulation of Pit & Quarry Among Nonmetallic - Mineral Producers in Recent Years:

1942	(May)	6,513
1941	(November	6,179
	(May)	5,945
1940	(November)	5,397
	(May)	5,037
1939	(November)	4,641
	(May)	4,617
1938	(November)	4,496
	(May)	4,366
1937	(November)	3,971
	(May)	3,772
1936	(November)	3,654

CONTINUOUSLY FOR 25 YEARS THE LARGEST PRODUCER CIRCULATION IN THE FIELD

78% increase in 5½ Years



The Portland-cement industry in October, 1942, produced 18,263,000 barrels, shipped 20,344,000 barrels from the mills and had in stock at the end of the month 10,627,000 barrels of cement, according to the Bureau of Mines. Production and shipments in October, 1942, showed increases of 9.4 and 14.1 per cent., respectively, as compared with October, 1941. Portland-cement stocks at mills were 35.3 per cent. lower than a year ago. The mill value of the shipments—141,272,000 barrels—in the first nine months of 1942, is estimated as $215,272,701.

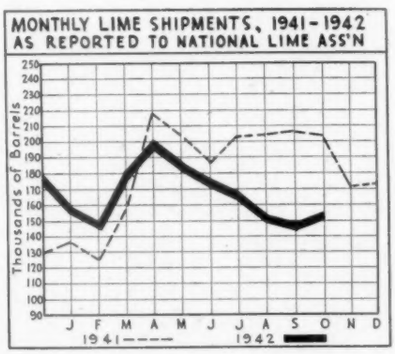
U. S. Gypsum Workers Honor Bear, Woide

Employees of the U. S. Gypsum Company and their friends, of Cincinnati, at a dinner-dance at the Mariemont Inn in that city December 5, paid tribute to John Woide, who enlisted in the U. S. Navy and Henry Bear, district manager, who has been transferred to the company's Cleveland office.

Mr. Woide, who reported for duty December 7, is taking a course at Columbia University in New York City. Edward Fish, newly appointed district manager, presented Mr. Woide with an identification bracelet from his associates, and Mr. Bear with a set of crystal glasses.

Lone Star Declares Two Stock Dividends

The Lone Star Cement Corporation has declared a year-end dividend of 25 cents and the regular quarterly dividend of 75 cents, payable December 23 to stock of record December 11.



According to data collected by the National Lime Association, 62 companies in October, 1942, shipped 155,097 tons of lime (108,480 quicklime; 46,617 hydrate). Reporting companies represent 41.0 per cent. of the association's total capacity of record. Based on PIT AND QUARRY'S estimates for the remainder of the industry, the total shipments for the month by all plants were approximately 420,000 tons. Shipments of lime by users for October, 1942, were:

Use	Quicklime (tons)	Hydrate (tons)
Agricultural	1,124	5,657
Building	14,326	20,366
Chemical	93,030	20,594
Total	108,480	46,617

3 More States Vote "No" on Diversion of Highway Funds

Iowa, Oregon, and West Virginia voters piled up overwhelming majorities in favor of proposed constitutional amendments prohibiting the diversion of highway funds in the November elections. This brought to 14 the states which require use of all gasoline taxes and registration fees for maintenance and construction of roads and payment of principal and interest on highway bonds. The people of California, Colorado, Idaho, Kansas, Michigan, Missouri, Minnesota, Nevada, New Hampshire, North Dakota, and South Dakota had previously ratified such amendments.

West Virginia's "Good Roads Amendment" was given a majority of nearly 6 to 1. In Oregon the ratio was 1½ to 1. Returns from Iowa showed 8 to 1 were in favor.

Gasoline and tire rationing and other wartime restrictions, which in recent months reduced gasoline consumption in the three states from 16 to 35 per cent. below the same months a year ago, were believed to have been important factors in the size of the vote cast in favor of this method of protecting road revenues.

Two other factors also are credited with piling up a record majority for these amendments. In each of the three states large bond issues were outstanding and some provision to insure payment of highway bond service and maintenance during the war without increasing taxes was essential.

The second factor was the apparent desire in each state to protect road funds against dissipation in order to insure their availability for highway construction projects as a cushion again post-war unemployment.

Cape Girardeau Plant Forms 5 Fire Brigades

At the Cape Girardeau, Missouri, plant of the Marquette Cement Manufacturing Company, the blowing of a whistle alarmed many residents of the city, until it was explained that it was the signal for a fire drill, several of which have since been carried out in recent weeks and which have resulted in the formation of a group of efficient fire fighters.

The plant, in keeping with the war effort and safety precautions incident to it, has organized five fire teams, one of which is on duty at all times. The teams, each made up of six men, are not aware when fire drills will be held.

A fire is set at some convenient vacant space during a drill and the team is tested on its ability to get to the fire and extinguish it. The men have to leave their jobs, run to the fire station, located about the center of the plant, and pull a hose cart to the scene of the blaze.

One of these fires was put out recently in the record time of three minutes.

Dewey Portland Moves Kansas City Offices

The general office of the Dewey Portland Cement Company in Kansas City, Missouri is now located at 310 Ward Parkway. The move from the old offices at 101 West Eleventh Street was made December 1.

The two plants of the Dewey company are located at Dewey, Oklahoma and Davenport, Iowa.

With a record of no loss of man-hour time due to accidents for four consecutive years in its North Kansas City, Missouri paper mill, the United States Gypsum Company has been awarded the Edward Benton Fritz Memorial Trophy as the major award in the paper-industry's annual safety contest. In addition, a plaque has also been awarded J. J. Kelly, works manager, is in charge of this plant by the National Safety Council. safety work at the plant.

Mining Engineers Pay Visit to New Plant of Universal Atlas

Non-metallic minerals were the principal topic of discussion at the meeting of the American Institute of Mining and Metallurgical Engineers' Industrial Minerals Division, held at Bethlehem, Pennsylvania, Oct. 22 to 24 at the Bethlehem Hotel. Registration totaled 148.

Apart from the technical sessions, the highspot of the meeting was a visit to the new and not-yet-completed No. 5 plant of Universal Atlas Cement Company at Northampton. L. S. Sprague, of the Universal Atlas company, described the new plant at a dinner-session on the preceding evening.

At the opening session with H. A. Reichenbach of the Nazareth Cement Company in the chair, Dr. C. C. William, president of Lehigh University, welcomed the visitors. Following this, the technical program got under way.

G. E. Seil, of E. J. Lavino & Co., discussed *New Developments in the Production of Magnesia for Refractories.* This paper was based on a bibliography of papers, some dating back 60 years, showing that the subject is not new. Processes employed were classified according to the reactions involved.

The session concluded with two other papers. These were: *Safety Methods in Quarrying,* by A. J. Curtis of the Portland Cement Association; and *Drilling and Blasting Practice in the Lehigh Valley Cement Region,* by H. I. Phemister of the American Cyanamid Company.

Research undertaken by the Bureau of Mines on talc used for radio insulators, on samples supplied by the Geological Survey, was described by T. A. Klinefelter, of the Bureau Station at Tuscaloosa, Alabama. Following this was a paper on *Uses of Silica Sand in the Glass Industry in Missouri,* by H. L. Sheakley and D. J. Coolidge, of the Pittsburgh Plate Glass Company. Occurrences of bauxite in Virginia were described by Arthur Bevan, state geologist, who advanced a new suggestion as to their possible origin.

The meeting closed with an impromptu description of the foamed slag produced by Bethlehem Steel Company and the process employed in making it. This material is used as aggregate for light-weight concrete, sound-proofing, and heat-insulation.

Revised Standards Change Gradation of Fine Aggregate

At the last annual meeting of the A. S. T. M. a number of revisions were made in the Society's Standards for aggregates for concrete (Serial Designation C 33). One of these revisions of principal interest to sand and gravel producers is that having to do with the grading of fine aggregate, the National Sand & Gravel Association points out. The 1939 Standard required the fine aggregate to be well graded from coarse to fine within the following limits:

Passing 3/8" sieve	100%
Passing No. 4 sieve	95 to 100%
Passing No. 16 sieve	45 to 80%
Passing No. 50 sieve	5 to 30%
Passing No. 100 sieve	0 to 8%

The limitations for the No. 50 and No. 100 sieve have been changed to 10 to 30 per cent. passing the No. 50 sieve and 2 to 10 per cent. passing the No. 100 sieve, except that it is provided that, when approved by the engineer, the 1939 minima of 5 and 0 per cent. through these sieves may be used if the concrete contains five sacks or more of cement per cubic yard. Provision is also made for supplementing the finer sizes by the use of an admixture, which may be a finer sand.

This move on the part of the A. S. T. M. is consistent with action already taken by the Federal Specifications Board and by the American Association of State Highway Officials. It is also in the direction of trends indicated by other specification writing bodies, and notably the Corps of Engineers of the U. S. War Department.

Producers are familiar with this trend and wherever deposits allow, have become more or less reconciled to it. In most cases the minimum limit of 10 per cent. passing the No. 50 sieve can be met by revised plant practice. It is the requirement for a minimum of 2 per cent. passing the No. 100 sieve that presents the greatest difficulty, even in those deposits in which minus-100 material is available. The minus-100 material is not available in many water-borne deposits and can be supplied only by expensive and unsatisfactory crushing methods or by the addition of fine material from another source. In those deposits where it is available it is difficult to meet the requirements and, at the same time, produce a material meeting the limitations on silt as measured through the No. 200 sieve. Also, difficulty in meeting the colorimetric test for organic impurities is often encountered due to the necessity of retaining the silt, in which the organic impurities are sometimes concentrated. Further, a sand containing 2 or 3 or 4 per cent. of minus-100 material, substantially all of which may be clay, has a dirty appearance and detracts from the pride which the producer has in his material.

Paul H. Townsend Is Advanced by Huron

At a meeting of the Board of Directors of the Huron Portland Cement Company, held December 8, Paul H. Townsend was appointed vice-president and general manager with general supervision over manufacturing, sales and accounting.

After serving as captain with the A.E.F. during the first World War, Mr. Townsend jointed the Huron organization in 1919 as superintendent of plants. In 1940 he was appointed general manager. His new appointment as vice-president and general manager also includes the cement company's subsidiary, the Huron Transportation Company, operating a fleet of bulk-cement lake vessels.

SAFETY "to-day and tomorrow" as a weapon against the Axis was stressed recently at a war-production meeting of superintendents and production chiefs of the 21 manufacturing plants of the National Gypsum Company. Here Merrill Pollard, the company's director of safety displays some of the new safety devices that are being used in all the plants' gypsum and lime mines. Left to right; Mr. Pollard; W. T. McCabe, Newburgh, New York; Douglas Jeffery, Clarence Center, New York; Gordon Tarbell, vice-president in charge of production; and H. J. Marsham, Akron, New York.

Lift Suspension on Building Projects Essential to War

A majority of the wartime construction projects of the Bureau of Mines, ordered suspended by the War Production Board in its order of October 20, have been given the "green light," following a hearing before the Facility Review Committee of the WPB.

Construction work on the Bureau's helium plants, explosives research laboratory, synthetic oil project, and pilot plants and laboratories working on aluminum may continue to completion, subject to limitations contained in previously issued Preference Rating Orders. A decision on two additional projects was deferred temporarily.

Failure to have permitted construction work to proceed on the helium plants, it was pointed out, would have meant that the Army and Navy would be unable to obtain enough of this noninflammable, lightweight gas for its lighter-than-air craft and other uses, since the Bureau of Mines is the world's sole producer of helium. Construction is now proceeding at the Bureau's well-known Texas plant and at five other sites.

The Bureau is also now allowed to proceed on the construction of its pilot plant and laboratory working on the production of gasoline, fuel oil and petroleum by-products from coal by the Fischer-Tropsch method, and on plants to devise and test processes for production of alumina (for making aluminum metal) from low-grade bauxite and aluminous clays.

The projects on which a decision has been deferred include the construction of a pilot plant for production of zinc metal from zinc ores by the gaseous reduction method, and a pilot plant for the production of sponge iron by direct reduction of iron ores with solid fuels and with gas. The sponge-iron plant was ordered discontinued immediately.

Missouri Portland Pays $1.25 to Shareholders

The Missouri Portland Cement Company of St. Louis has declared a dividend of $1 per share, payable December 15, as of record November 28, bringing the total for the year to $1.25. The stock sold ex-dividend on November 25.

The total paid in 1941 was $1.50.

E. J. Krause Again Heads Middle-West Agstone Producers

The annual meeting of the Midwest Agricultural Limestone Institute held December 18 in Chicago. The entire list of officers and board members were re-elected for 1943. These include:

President: E. J. Krause, Columbia Quarry Company; vice-president: Dan Sanborn, Lehigh Stone Company; treasurer: H. C. Clark, Consumers Company of Illinois; secretary: J. R. Bent, Dolese & Shepard Company.

Board members also include: Colby Armstrong, France Stone Company; Sidney Marks, Material Service Corporation; R. S. Quelle, Linwood Stone Products Company; Wm. E. Hewitt, East St. Louis Stone Company; and W. H. Traver, Elmhurst-Chicago Stone Company.

Much of the meeting was given over to a round-table discussion of the various phases of the agricultural-limestone project One of the features of this discussion was a talk given by Dr. F. C. Bauer of the Agronomy Department of the University of Illinois.

Silicosis Claims Pioneer Operator in Wisconsin

Silicosis is reported to have caused the death of Emil A. Mundt, 75, president of the E. A. Mundt Granite Company of Marinette, Wisconsin, on December 4. He had been ill for several years.

Mr. Mundt was a pioneer dimension-stone operator in that area having settled at Amberg, near Marinette, in 1891, shortly after arriving in this country from Europe.

Dies in Bin Despite Heroic Rescue Effort

John E. Fulk, 27, a belt man for the Smoot Sand & Gravel Company of Washington, D. C., was fatally injured recently, when he fell 60 feet down a gravel bin in the company's yard in that city.

In an effort to save the injured man, Hood Baxley, a senior medical student at George Washington University, crawled up through a shoulder-width opening in the bottom of the bin and administered first aid by flashlight. Mr. Fulk was removed from the bin with block and tackle after having been strapped to a ladder which had been converted into a sling by members of the Washington Fire Department. The accident occurred when Mr. Fulk went to the top of the 60-foot high bin to move a chute into place. When he failed to return, other workers discovered he had fallen into the bin. The deceased had been working at the plant about two months.

Blasting-Cap Explosion Injures Two Quarrymen

Harold Hines, 26, and O. E. Wren, 33, employed at the plant of the Silica Products Company at Everton, Ark,. suffered injuries when a dynamite cap exploded in a fire around which a group of workers were standing at the stone quarry.

It is not known how the cap got in the fire. Fragments wounded the two men and they were taken to Harrison, Arkansas, for treatment.

New Quarry Company Formed in Arkansas

The Moark Stone Company of Harrison, Arkansas, has been incorporated at Little Rock, and will produce crushed stone.

The firm listed 1,000 shares of capital stock of $100 par value each and $50,000 starting capital. Incorporators are Harry L. Roberts and Frank Kull of East St. Louis, Illinois, and Herbert R. Shock of Long Beach, California.

Montana Blast Loosens 300,000 Tons of Stone

One of Montana's greatest quarry blasts was set off at Trident, Montana, recently by the Three Forks Portland Cement Company.

B. J. Latimer, plant superintendent, said 300,000 tons of stone was broken down, sufficient to make nearly 1,000,000 barrels of cement.

Marble Cliff, Arrow in New Columbus Offices

Offices of the Marble Cliff Quarries Company and the Arrow Sand & Gravel Company, Columbus, Ohio, have been moved to the Atlas Building, 8 East Long Street. They were formerly located at 20 North Fifth Street.

The National Gypsum Company has declared a dividend of 25 cents on the common stock, payable December 30 to stock of record December 23. The company paid 40 cents in December 1941.

Fewer Ships Carry More Crushed-Stone on Lakes in 1942

Heavier loading of Great Lakes freighters to increase traffic capacity was indicated in a report by the Inland Lime & Stone Company, that fewer ships carried more stone last year than during 1941.

The report was issued after the last boatload of stone steamed out of Port Inland, about 25 miles east of Manistique, Michigan, to close the current shipping season for the port.

Since the season opened March 27, a total of 346 vessels cleared the port, 29 fewer than 1941, the company said.

Former Cement Worker Is Missing in Action

Private Claude Likens, formerly an employee of the Kosmos Portland Cement Company, has been listed by the War Department as "missing in action." Called into service March 1, 1941, he was graduated the following September from the Armored Tank Force School at Fort Knox, Kentucky.

After graduation he went with his unit to Camp Polk, Louisiana, and then to San Francisco. On November 1 he left for the Philippines and on his arrival there he was transferred to the 194th Tank Battalion. He was last heard from in May, 1942.

Increases Output After Fire at Another Plant

The Silica Products Company at Everton, Arkansas, has increased its output to handle some of the orders of the company's plant at Guion, Arkansas, which recently was destroyed by fire with a loss of $50,000. The plant produces sand for glass factories and other industrial sands. The plant at Everton is now operating three 8-hour shifts.

Magnesite Workers Win Wage Increase

It is reported that a wage increase at the Northwest Magnesite Company plant, near Chewelah, Washington, will aggregate $250,000 a year. Employees will work on a 48-hour weekly basis and receive pay for 52 hours work.

The company is said to be producing 80 per cent. of all the magnesite used in the United States.

CURRENT BUSINESS INDICATORS

WITH A NEW and probably less coöperative Congress scheduled to take office shortly after the turn of the year, President Roosevelt took several of the steps which had long been urged upon him as requisite to the most effectve marshalling of America's war resources.

Centralized control of the entire man power of the nation, including the selection of men for the armed forces, has been placed in the hands of Paul V. McNutt. Similar one-man authority over the production and distribution of all food has been vested in Secretary of Agriculture Claude C. Wickard. In another move which represented a conciliatory gesture towards the new Congress the President accepted the resignation of Leon Henderson as OPA chief. While it is expected that this change will ease Congressional opposition to some aspects of the Administration's anti-inflation program, it is doubtful whether the great extension of rationing due to be instituted early in 1943 will be delayed by Henderson's successor, rumored as former Senator Prentiss Brown of Michigan. Mr. Brown distinguished himself in the fight against inflation by his aggressive support of last year's price bill.

The changes noted above appear to form part of a pattern designed by Mr. Roosevelt to clear the decks of wartime Washington for decisive action in the year ahead. Taken with the compromise plan worked out between the War Production Board and the armed services for the scheduling of munitions production, many officials feel that considerable progress has been made in improving the war organization. Under this compromise plan WPB Production Vice-Chairman, C. E. Wilson, is given "general supervision of the scheduling of the programs between the various services to see that they do not conflict, and that they are of such a nature that they may be performed in accordance with the requirements of the Joint Chiefs of Staff and of the total war program." Mr. Wilson's control is to be exercised "through" the supply services of the Army, Navy, and Maritime Commission. It is clear that what constitutes general supervision is a matter subject to varying interpretation, and there is still considerable speculation in the capital as to just where the balance of power resides as a result of this settlement, and just what will happen if and when a major showdown actually occurs between the WPB and the supply services.

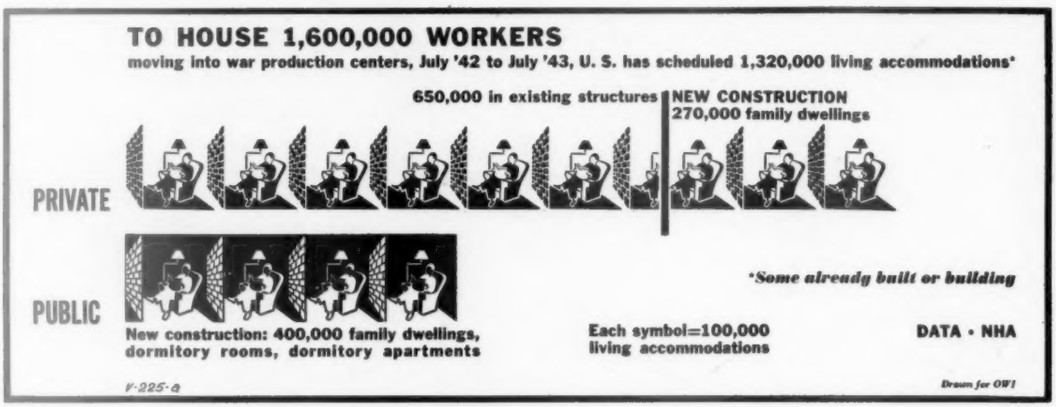
Meanwhile industrial production continued its skyward climb, the Federal Reserve Board adjusted index standing at 191 at the end of November (1935-1939 = 100). As in previous months, munitions production accounted for the bulk of the rise. War expenditures passed the $6,000,000,000 mark in November, making a total of over $46,000,000,000 for the first 11 months of the year. By the beginning of 1943 the Government will be spending for war at the rate of over $75,000,000,000 a year, almost seven times the total war expenditures in 1941.

Despite this staggering total, results in the munitions plants in recent months have not been up to expectations. In his war-production report for October Donald Nelson pointed out that the 3 per cent. increase in munitions output recorded in that month was the smallest monthly increase since the beginning of the year. Ordnance and naval-vessel production were up slightly, and merchant-vessel completions declined from the 1,000,000-ton peak achieved the month before. The most disappointing record was turned in by the aircraft program, with production down 5 per cent. below September.

There is no questioning the tremendous quantities of military equipment and supplies which we are producing; in 1942 alone about 49,000 planes, 32,000 tanks and self-propelled artillery, 17,000 anti-aircraft guns of 20-mm. size and larger, and 8,200,000 tons of merchant shipping were delivered. In all except the last category, however, we have failed to meet the Presidential objectives set in January, 1942. At the same time, the goals for 1943, while not yet definitely announced in their recently modified form, are sure to be at least twice as great as last year's in almost every segment of the program. The tremendous effort required to supply our war machine in the twelve months ahead will call forth every ounce of the vast productive energy of the nation.

In the year since Pearl Harbor more attention has generally been directed toward the errors that have been committed in eliminating bottlenecks and delays in the war-production program than towards the positive side of the ledger.

No one can tell what obstruction may lie around the next curve on the road to greater and still greater war production, but some comfort may be derived from the knowledge that in the past year huge distances of previously uncharted highway have been covered at a steadily increasing rate of speed.


TO HOUSE 1,600,000 WORKERS
moving into war production centers, July '42 to July '43, U. S. has scheduled 1,320,000 living accommodations*
650,000 in existing structures
NEW CONSTRUCTION
270,000 family dwellings
PRIVATE
PUBLIC
*Some already built or building
New construction: 400,000 family dwellings, dormitory rooms, dormitory apartments
Each symbol=100,000 living accommodations
DATA • NHA
Drawn for OWI

EDITORIAL

What Do You See Ahead?

THE number of forecasters and prophets abroad in the world should remind us that the qualities by which they thrive and enjoy temporary prestige are not uncommon, and that the frequency with which they misread the future does not suggest that they possess exceptional insight or foresight. In troublous times like these in which we live their number multiplies and in a rapidly-changing world their predictions are too soon forgotten to come back to plague them. They add to confusion, they encourage despair, and they do little to clarify, to inform or to guide. Unwittingly, perhaps, they magnify what history later shows to have been the relatively unimportant factors; they gloss over the events that really shape the things to come. They inspect and scrutinize, dissect and analyze, after a fashion, only to emerge in thin air, having by-passed the basic trends that make the future what it will be. So, at a time of year when many editors feel called upon to give a sort of tea-leaves reading of the future, we invite you to undertake this task yourselves, offering you merely as signs of the times excerpts from the expressed opinions of men and women who are living to-day. Most forecasters have much less solid foundations on which to erect their prophecies.

The lawmakers of civilized nations usually trail far behind public thinking on social questions. In democracies they are afraid to be guilty of what someone has called "statesmanlike anticipation"; they have more than one section of the people to satisfy by their voting, so they move only when they are pushed. In despotisms they do nothing until the threat of revolution and assissination begins to look real, when they stage circuses for those who cry for bread. In both cases their legislative action is nearly always remedial rather than preventive, evidence of hindsight rather than foresight.

The man who sees farthest into the future, or who most accurately sees what will occur before it happens, is he who can look below the symptoms and recognize the disease. Instead of being deeply perturbed by trivial events, he looks for trends in public thinking and for the social causes that underlie them. The extent to which he can lay aside personal interest will determine the breadth of his view; the degree to which he can see reality instead of visualizing the personally-to-be-longed-for will measure the power and scope of his mentality.

For your thoughtful consideration there are offered below some current opinions ranged on the opposite sides or the arguments dealing with human welfare. Since the ideas themselves, rather than the personal characteristics of those who voice them, are the really important factors in the making of history, those who have expressed these views will remain unidentified by name, or occupation, or political belief, or social or economic status. You should thus be spared the folly of judging them by personal and therefore immaterial criteria and be given the opportunity of weighing them almost entirely on the basis of their reasonableness. For visual clarity the opinions of one group appear in italic type, those of the other group in bold-face type. As you read them, one by one, try to appraise them in long-range terms, consider which ones, in your opinion, are most likely to prevail. If you can do that correctly—and time alone will tell—you will have read as far into the future as anyone dare look.

Democracy and Freedom

They talk about the "century of the common man," but what they really have in mind is a straight-jacketed world bossed by politicians and busybodies.

We of this generation . . . go forward to meet the challenge of our day . . . the challenge of the new democracy. In [it] there will be a place for everyone—the worker, the farmer, the business man, the housewife, the doctor, the salesman, the teacher, the student, the store clerk, the taxi driver, the preacher, the engineer—all the millions who make up our modern world. . . . Out of it, if we all do our part, there wil be new opportunity and new security for the common man.

The new democracy, the democracy of the common man, includes not only the Bill of Rights, but also economic democracy, ethnic democracy, educational democracy, and democracy in the treatment of the sexes. . . . It is internationally minded and supremely interested in raising the productivity and, therefore, the standard of living of all the peoples of the world.

The world of liberalism is disappearing, the victim of its own mistakes. . . . The capitalist ideology is collapsing, together with its own world. . . . Those who dream of a liberal-democratic Europe are only deceiving themselves.

A great process has started, which no man—certainly not Hitler—can stop. Men and women all over the world are on the march, physically, intelectually and spiritually. After centuries of ignorant and dull compliance hundreds of millions of people in eastern Europe and Asia have opened the books. . . . They are beginning to know that men's welfare throughout the world is interdependent.

It remains for us to convince those people to whom we are promising freedom and opportunity that we really believe what we declared to be self-evident truth in our own Declaration of Independence that all men are created equal. . . . I live in constant dread that this war may end before the people of the world have come to a common understanding of what they fight for and what they hope for after the war is over.

Poverty and Plenty

And, though it is human nature to help the unfortunate, it is also human nature to restrict charity to bare living standards. If the state persists in subsidizing and pampering the relatively useless citizen at the expense of the useful citizen, one of two things will happen: Either the useful citizen will rise up in his wrath and overthrow the state, or, lacking the power to overthrow the state, he will lose his initiative and sink toward the level of the group which he is being made to support.

Let us recognize the fact that for many, many millions the pursuit of happiness has lost in the past quarter century much of the plausibility it had throughout our nation's history. To-day we look to the future and plan boldly—for what? Not for happiness, but for the mitigation of wholesale misery, for stabilization of poverty. . . . We must go beyond the rationing of scarcity to the practical provision for the fair and healthy distribution of abundance. . . . Leaving aside all altruism or humanity, we must attend to the distribution of minimum abundance hrough-out the world. A quart of milk for every Hottentot and every hungry person in the world is the surest and cheapest insurance against World War III.

We believe that people are prompted to progress by want—want of things they haven't, and believe they can get if they strive hard enough—and that they are prompted by fear to make themselves as secure as possible in this chancy world. Want and fear, we believe, are two mainsprings of human progress.

This war has shown us—or should have shown us—that the productive capacity of this country is so great that there is no reason why each citizen should not have an education, the right to work, and the right to protection in old age.

The statement frequently made that society no longer will tolerate unemployment is as vain as would be the statement that society will no longer tolerate disease.

Maintenance of full employment and the highest possible level of national income should be the joint responsibility of private business and government. . . . We must have continuity in the flow of income to consumers and from consumers to the industries of city and farm. We must have a national system of job placement.

War and Peace

The world will some day engage in fierce war for its existence. No one can doubt this. In the end only the desire for self-preservation can be victorious. Beside it so-called humanity, which is made up of cowardice, stupidity and illusory superior knowledge, will melt like snow in the sun. Mankind became great in constant warfare; in permanent peace it will go down to destruction.

The outcome of the present world war will determine whether we are to have a free world or whether a dictator shall make slaves of all the peoples of the earth who do not belong to his race. We will emerge from this contest a free people or we and our descendants will become the slaves of a master who knows neither justice nor mercy.

We should approach the whole question [of world organization for peace after the war], not emotionally from the standpoint of either sacrifice or selfishness, but objectively, from the standpoint of finding the common meeting ground on which the people of the world can stand. This meeting place should not be hard to find—it is the security of the plain folks against depression and war.

Obviously, the United Nations first must have machinery which can disarm and keep disarmed those parts of the world which would break the peace. Also, there must be machinery for preventing economic warfare and enhancing economic peace between nations. . . . The aim would be to preserve the liberty, equality, security and unity of the United Nations—liberty in a political sense, equality of opportunity in international trade, security against war and business depression due to international causes, and unity of purpose in promoting the general welfare of the world.

Or perhaps Hitler was not wholly to blame for this war. Perhaps there was a subconscious conviction in the minds of many Europeans that there were too many people in Europe anyway, and that a big bloodletting might help matters.

Not only must people have access to what other peoples produce, but their own products must in turn reach men all over the world. There will be no peace, there will be no real development, there will be no economic stability unless we find the method by which the trade barriers hampering the flow of goods are removed.

To win the peace three things seem to me necessary—first, we must plan now for peace on a global basis; second, the world must be free, economically and politically, for nations and for men, that peace may exist in it; third, America must play an active, constructive part in freeing it and keeping its peace.

It would be better for the world if the peace negotiators met to agree upon the probable date for the next war and went home, leaving the causes to inevitability and the chief actors to destiny.

We know that lasting peace will be found only in the way the peoples of the world live together as good neighbors, and work together toward a common goal of security and justice. No perfect world will rise full-bloom from the scorched earth, the blood and sacrifice, that military victory will require. When Axis military power is destroyed, we simply will have earned the right to work out our own salvation. . . . It is their [the forward-looking people's] solemn duty—in government and private life, regardless of party—to keep our sights high in rebuilding for peace. This is what our boys in uniform expect and will demand of us.

We must realize that we are not making a treaty for the men who sit on the other side of the table and who have been guilty of these terrible crimes against mankind. We are not making a treaty for their benefit—we are not making a treaty for our benefit. . . We are making this peace treaty for millions, and hundreds of millions, of innocent people yet unborn.

Isolationism and Interdependence

It is easy to ignore common sense and draw diagrams for another world. It is pleasant to do so and it probably makes the person feel that he is better than other men, much better than the people who look at him and his plans skeptically and say they won't work. . . . The plans are beginning to be truly horrifying.

We must not be so illogical as to try to impose the principles of freedom upon other peoples if we are not practicing the same philosophy ourselves.

It is a moral issue, this principle of freedom for all, and as a moral issue it is the most practical in the world. If we have learned anything, it is that without the capacity for moral integrity for a principle no nation continues to stand. . . . When will we learn that greed and revenge and unjust power over human beings are the most costly and impractical things in the world?

If we mean freedom for all, we can put that idea in terms that will excite men's minds everywhere on earth. But if we only think we mean freedom for all, while in fact we have no intention of treating most of our fellow men as equals, we can only write something which will be another fine illustration of the white man's hypocrisy—another propoganda weapon for Hitler or Tojo.

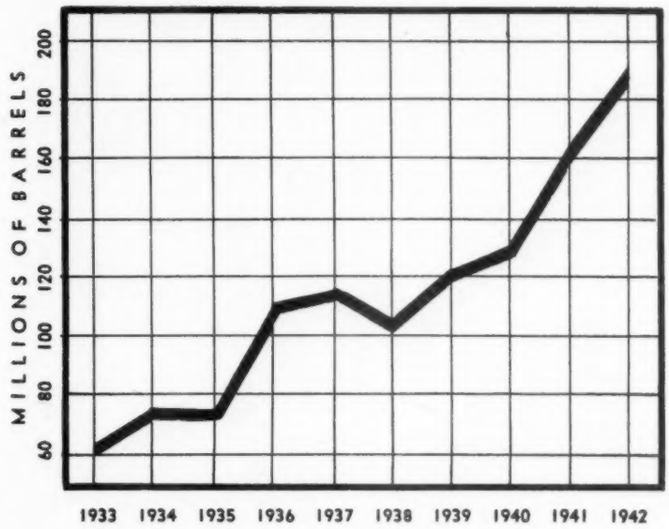
Perhaps the world eventually will come under the rule of one government. There may finally be some kind of Federation of the World, Parliament of Man, League of Nations, or whatever it may be called. But we think this will come to pass, not after the present war, but after several more big wars.

Whether we like it or not, we know that the divine injunction, "No man liveth unto himself alone," applies to nations as well as individuals. . . . We are fighting not only for our own freedom and our own liberty, but we are fighting for the freedom of all the peoples who believe with us that the advancement which the world has so far made in human relationships must be maintained, whatever sacrifice is necessary.

Nothing is more natural or more desirable than that this country should exercise a powerful influence on the formation of the peace. . . . We can not doubt that America will make its full weight felt in favor of a peace that will not be only another exhausted intermission between two catastrophes, but that will grant lasting protection to the peoples of the world for their work and their enjoyment of life, and that will guarantee lasting freedom from fear and want.

SO, we say, be your own forecaster for to-day. Check those opinions which in your emotionally-disturbed judgment of this hour impress you by their reasonableness and seem worthy of survival. Tear these pages out, if you like, and file them in the envelope containing your war bonds, and when you remove those bonds for payment at their maturity ten or twelve years hence, draw out these pages, too, and read again these views of the men and women of our day. Look at them in the light of conditions as you find them in the early nineteen fifties. You will then really know which group spoke not only for their own day but for all time, not only for themselves but for all men, not only for the material goods of life but for the higher things as well. You will then learn how practical or impractical were the "visionaries" of to-day and how wise or stupid were the "hard-headed."

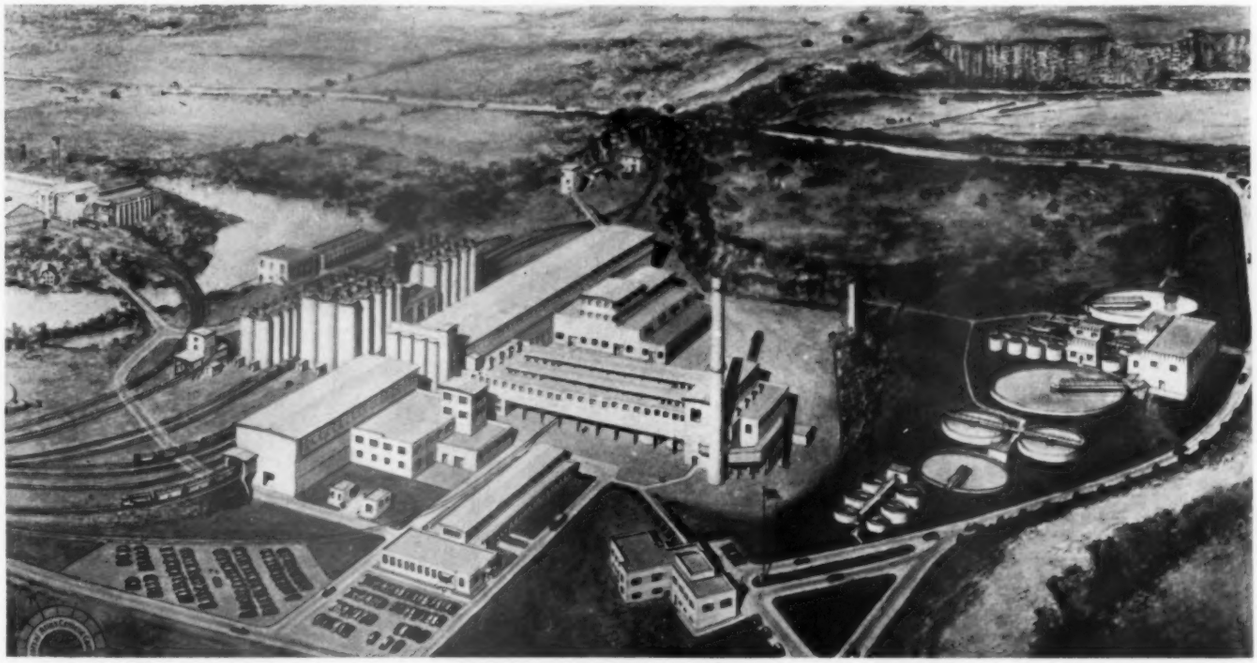
Portland Cement • 1942



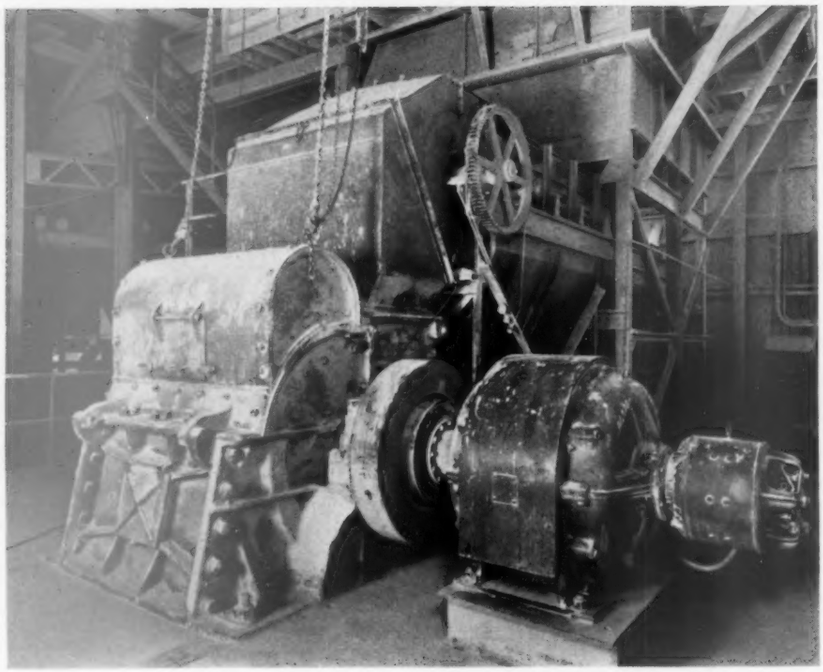
THE production and shipments of Portland cement in 1942 apparently set an all-time record of about 183,000,000 and 189,000,000 barrels respectively. Actual figures are available only through November but estimates were made for December which were based on production in previous years. These figures compare with the production of 164,002,000 barrels and the shipment of 167,508,000 barrels in 1941 and the previous production high of 176,299,000 barrels in 1928. The production peak of 17,605,000 barrels and the shipment peak of 21,282,000 barrels were both reached in August.

In spite of the fact that nearly all the usable kilns and other equipment were called into service and that the customary winter shutdown was eliminated as far as possible, the industry in general was unable to keep pace with the demand. The natural result was a gradual depletion of the stocks on hand which reached low level of 10,627,000 barrels in October, 1942, the lowest figure in recent years. In October, 1941, the low point of that year, the stock on hand was 16,416,000 barrels and this was built up during the winter season to a peak of 25,714,000 barrels in February, 1942. In May, 1942, stocks hit the toboggan, dropping nearly 14,000,000 barrels in five months.

Market Outlook Judging from available information 1943 will show a decided decline in the demand for cement, which will be especially noticeable after the middle of the year. By that time most of the large war projects now under construction will have been completed and there is as yet no evidence that new projects of comparable importance are contemplated or that the restrictions on non-military construction will be eased. This is also apparently the opinion of officials of the U. S. De-



This artist's conception shows the Northampton plant of the Universal Atlas Cement Company as it will appear when completed.



The hammer-mill secondary crusher in the Des Moines plant of the Marquette Cement Manufacturing Company with pan feeder above.

partment of Labor, who recently predicted that employment on new construction in 1943 will drop to an average of slightly over half of the average for 1942. It seems evident that the construction volume will not exceed that permitted by governmental-control agencies. The F. W. Dodge Corporation predicts that the total volume of 1943 construction will be about one-half that of 1942, a result which would compare favorably with the 1940 total and the 1920-1939 average. This is not out of line with estimates of cement-company officials that cement production in 1943 will be about 140,000,000 barrels, including about 15,000,000 barrels for use outside this country.

The rapid increase in the demand for cement for important work in certain areas made it necessary for the War Production Board to temporarily freeze cement and allocate its use. This began as early as July in some areas and at one time cement was frozen in most of the area west of the Mississippi River. No shortage existed, however, in the New England and Middle Atlantic states, where a large percentage of the industry's capacity exists. One important step, designed primarily to increase the output of cement about 20 per cent., was the WPB order issued August 3 which limits to three essential types the varieties of cement that can be made. See P&Q, September, 1942, p. 46.—ED.

Industry Capacity A number of plants completed important improvement programs during the year and many minor improvements were made. Nevertheless the expenditures for new equipment were probably the lowest in recent years due to priorities and the fact that most equipment manufacturers are concentrating their efforts on war production. No new plants were completed in 1942 but one, begun in 1941, is expected to be operating early in 1943. Proposals have been made for the construction of new plants in Arizona, South Carolina and Hawaii but no definite plans have yet been announced.

The capacity of the industry was again increased by the reopening of plants which had been shut down. The Wolverine Portland Cement Company started up its plant at Coldwater, Michigan, after several years of idleness. The Riverside Cement Company reopened its plant at Oro Grande, California, after a 14-year shutdown because of the urgent demand for cement on the west coast. This plant is now producing clinker which is shipped to the company's Crestmore plant for grinding.

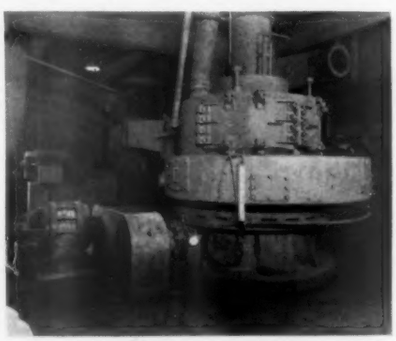
Firing hood of the new 11½- by 475-foot kiln in the Marquette plant.

The Wabash Portland Cement Company is dismantling its plant at Stroh, Indiana, and is shipping usable equipment to its plant at Osborn, Ohio.

The capacity of the industry in the Lehigh Valley area was lowered by the cessation of operations by the Edison Cement Corporation at New Village, New Jersey. It is reported that this plant has been sold to Chilean interests and will be transported almost in its entirety to that country.

The Vulcanite Portland Cement Company, with a plant at Vulcanite, New Jersey, recently announced its decision to retire from the Portland cement business and has offered the plant for sale in its entirety.

The plant of the Newaygo Portland Cement Company at Newaygo, Michigan, had not operated for many years and much of its equipment had been dismantled but the plant buildings were torn down to provide scrap steel for the war effort.



The direct-firing coal mill which fires the Marquette kiln.

Special Products for War Several other cement plants also contributed to the war effort by producing vital materials other than cement. At least two plants are reported to be sintering iron ore in kilns not needed for cement production. This drives off the water of crystallization and results in a product which can be used in open-hearth furnaces in place of scrap. Another cement company is reported to have converted its plant for the duration of the war to the manufacture of roasted dolomite for the steel indus-

One of two conical mills used for clinker grinding in Medusa plant.

try. Another plant in the wheat belt has not been operated for several years and it is reported that its cement-storage silos are being used to store some of the bumper crop of that grain.

Universal Atlas The outstanding cement development of the year is the new plant of the Universal Atlas Cement Company at Northampton, Pennsylvania, which is now nearing completion. An article describing this plant appears elsewhere in this issue. The most interesting feature of this plant is the removal, by centrifugal sedimentation and froth flotation, of excess aluminates and silicates from the argillaceous limestone (Lehigh Valley cement rock) available on the company's property. Suitable raw materials for any of a wide variety of cements can be made by this method.

The improvement program began in the quarry, where locomotives and cars are being replaced by trucks. The crushing and screening methods used are in line with modern practice and the rock is stored with other raw materials in a covered building. The cement rock is ground in two separate closed-circuit grinding units each having a primary and secondary side. The primary mill in each unit is operated in closed circuit with a rake classifier and the secondary mill with a bowl-and-rake classifier. The slurry is pumped to the cement-rock thickener.

Part of the slurry is pumped to blending tanks and part of it to a circuit for beneficiation. Two centrifuges remove from this circuit a cake containing the coarser material with a high percentage of $CaCO_3$. The finer material goes to 66-inch flotation cells, arranged in four rows of 18 cells each, which remove the excess argillaceous portion, leaving a more concentrated calcium carbonate. The concentrates go to a thickener from which the high-calcium underflow goes into a mixer along with the unfloated cake from the centrifuges. The mixture is pumped into blending tanks.

The eight blending tanks are used to blend the product of the flotation department with the material from the raw-cement-rock thickener to make the desired kiln feed. For special cements iron and sand slurries, ground in a separate mill-and-classifier circuit, can be added from their individual thickeners. The kiln feed goes to a pair of large storage tanks from which it is pumped to pairs of feed tanks under the three kilns, each of which is provided with two slurry-filter units of the rotating-disk type.

Three kilns are each 10½ feet in diameter and 250 feet long and the fourth kiln is the same length but 9 feet in diameter. Each kiln has a direct-firing unit coal pulverizer and discharges its clinker into a vibrating-grate type of air-quenching clinker cooler.

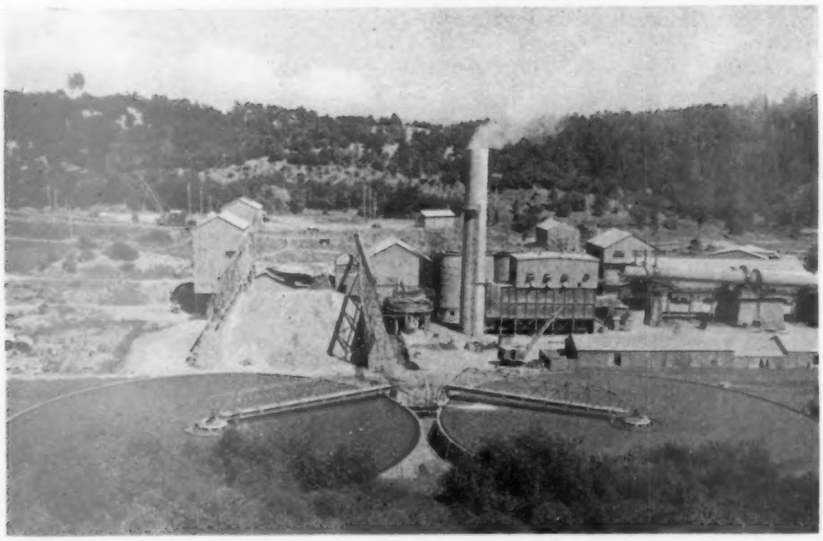
The clinker grinding is done in three separate and complete grinding units, each consisting of a preliminary ball-mill and a ball-peb mill for final grinding. Each finish mill is in closed circuit with two air-separators which make finished cement. This is pumped to two groups of 15 reinforced-concrete silos which are arranged in three rows of five silos each. The cement can be loaded out from these silos direct into bulk cars or it can be pumped to separate buildings for sacking or bulk loading.

Marquette The Marquette Cement Manufacturing Company late in 1942 completed the program of rehabilitation at its Hawkeye plant in Des Moines, Iowa, which was begun shortly after this plant was taken over in September, 1940. In this program some of the departments were replaced with entirely new ones, while in others new equipment was added to replace some of the older units or to supplement them. In other departments only minor changes were necessary to bring them abreast of modern practice.

In the quarry at Earlham, 30 miles away, old methods and machinery were discarded for new and radically-different equipment and methods which went into operation early in the 1941 season. The stripping is now done by contract. The drilling of blast holes is done with a special tractor-mounted rig with self-contained air-compressors. The stone is loaded by a 2¾-cubic yard Diesel shovel into standard railway cars, which are spotted for loading by a special tractor-mounted car puller and are later hauled to a siding by a 65-ton General Electric Diesel-electric locomotive. Other quarry improvements included new washroom and locker facilities, a water-supply system, a Diesel generator and a portable Diesel air-compressor.

In the crushing department no

One of three slurry filters installed in Medusa's Silica, Ohio plant.



In this view are shown the two 150-foot thickeners and one of the two classifiers installed in the Calaveras plant.

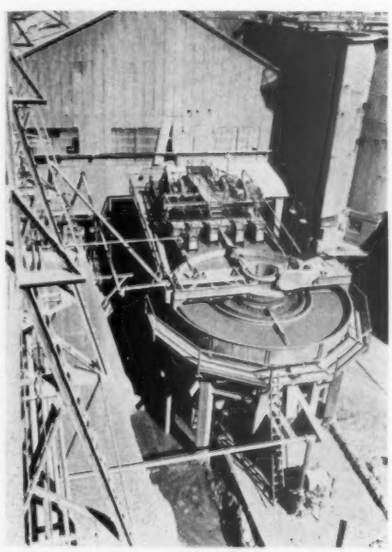
changes were made in the car-unloading and primary-crushing equipment but the secondary-crushing arrangement, consisting of two hammer-mills, a screen and two feeders, was replaced by a single pan-feeder and a Gruendler hammer-mill, which is producing minus ¾-inch rock at the rate of 250 tons per hour.

A belt-conveyor carries the rock to the limestone-storage section of the material-storage building which is entirely new. This building is 500 feet long, 80 feet wide and 60 feet high and is constructed of concrete columns and crane girders and has an arched concrete roof. Storage compartments are provided for limestone, silica, iron sinters, diaspore, shale, coal, clinker and gypsum. The coal and gypsum are brought into the building on two tracks in railroad cars from which they are unloaded direct to their respective bins by the overhead crane which operates throughout the full length of the building. This crane feeds stone, shale and any admixtures desired into five raw-mill bins equipped with individual feeders.

The raw-grinding department is entirely new except for four tube-mills which were transferred from the old plant. Conveyors and elevators feed the proportioned raw materials into two preliminary-mill feed bins. Poidometer feeders regulate the amount of material and constant-pressure meters the amount of water going into the new 9½-foot diameter by 5½-foot long Allis-Chalmers preliminators. The slurry is pumped to 4- by 6-foot Utah vibrating screens which return the coarse material to these mills. The material passing through these screens goes into a sump from which Ferris-wheel feeders supply the four Smidth tube-mills.

Four agitator-equipped tanks are used for high-lime, high-silica, high-iron and high-alumina slurries which are used for final mix correction. Eight larger tanks have a capacity sufficient for four days of kiln operation.

The new kiln is supplied with slurry by a Ferris-wheel feeder. This kiln is 475 feet long and 11½ feet in diameter and its rotating portion weighs about 1,220 tons with its load. This makes it not only the longest kiln but also the largest and heaviest rigid and integral piece of equipment in use anywhere in this hemisphere. Heat-transfer chains are used for a distance of 105 feet in the drying zone. Both the kiln end and the seal are air-jacketed.



One of the two bowl-and-rake classifiers in the Calaveras plant.

The clinker is discharged into an Allis-Chalmers air-quenching cooler which has a grate length of 100 feet. A Multiclone system of dust-collectors prevents the loss of clinker dust from the cooler waste-air stack. The cooled clinker is weighed and conveyed to its section of the storage building.

The coal used for firing this kiln goes first to a small hammer-mill and is then conveyed and elevated to a bin over the Babcock & Wilcox direct-firing mill.

Clinker and gypsum are proportioned from their bins by constant-weight feeders and the mixture is carried on a belt-conveyor to the clinker-grinding department, which has been rehabilitated but is otherwise unchanged. The equipment includes Smidth Kominuters with outside screen classification followed by Smidth tube-mills.

The cement-storage silos and the packing department have also not

Inclined-grate clinker cooler installed in the Calaveras plant.

been changed. The silo storage capacity is 150,000 barrels and there is also a warehouse for overflow storage which will eventually be rehabilitated or replaced by additional silos.

The power-house supplying the power for this plant was improved by the installation of a new boiler which is fired by two Babcock & Wilcox coal mills taken from the old coal department. The existing turbo-generator was retained along with much other equipment but a new reinforced-concrete boiler building was erected.

Medusa The plant of the Medusa Portland Cement Company at Silica, Ohio, was improved by the installation of Eimco slurry filters on each of its three kilns. Multiclone dust-collectors were installed on each of the three rotary coolers and in the finish mill a preliminary-grinding ball-mill was re-

placed by two Hardinge conical mills.

The slurry filters are credited with a considerable reduction in the fuel consumption of the kilns per barrel of clinker produced. They also corrected a condition which had caused trouble for some time. Slurry was formerly fed to the kilns with a moisture content of 35 per cent. but, because of its high shale content, it was too stiff to be pumped efficiently. The filters made it possible to increase the slurry moisture to 40 per cent. for pumping and they produce

The three new stoker-fired boilers in the Louisville plant.

an 18 per cent. filter cake which is ideal under the existing conditions.

The slurry is mixed and blended in the usual manner and is pumped from the kiln-feed tanks to the Ferris-wheel feeders of the three Eimco slurry filters. Each filter has 11 disks, each one of which is 12 feet in diameter and consists of 16 segments. Each is driven through a Reeves variable-speed reducer, and an automatic electric-relay control varies the speeds of the feeders and the filters in accordance with the speeds of the kilns.

The filter cake falls on a belt-conveyor from which it is discharged into a pug-mill, where it is mixed with reclaimed cement dust before being fed into the kiln.

In the clinker-grinding department the clinker is fed from the bins by Hardinge constant-weight feeders, along with the required percentage of gypsum, into the 48-inch by 9-foot conical mills. The product of each mill goes to a set of three Tyler Hum-mer screens equipped with 20-mesh wire screen cloth, and the oversize from each set of screens is returned to the proper mill.

The minus 20-mesh material passing through these screens is carried by screw-conveyors to 500-barrel bins over the two 7- by 22-foot tube-mills which have been retained for finish grinding. Their products are elevated to an 18-foot Raymond separator from which the rejects are returned to the mills. The product of this separator is finished cement, which is pumped to the cement-storage silos.

Calaveras The Calaveras Cement Company completed some major improvements to its plant at San Andreas, California, just in time for it to participate fully in supplying the vast amount of cement being used in war construction on our western coast. These improvements supplemented others made by the company in recent years with the result that the plant is now a well-balanced operation well ahead of current practice in most of its departments.

Additions to the crushing department eliminated a "bottleneck" there, but the most important improvement was the installation of a Dorr closed-circuit wet-raw-grinding system. This installation increased the capacity of that department nearly 60 per cent., with an 18- to 20-per cent. decrease in power consumption per barrel, and the slurry is now ground to a fineness of 92 to 94 per cent. minus-200-mesh compared to the former maximum of 88 per cent. This system has also made possible a more uniform slurry with respect to composition, fineness and solid content. It is also given partial credit for a 15- to 17-per cent. increase in the kiln capacity, a substantial lowering of the fuel consumption, and a 10- to 15-per cent. improvement in the grindability of the clinker. This work was done with little delay to operations and all the new equipment was fitted into the original flow-sheet in such a way that only minor units have had to be moved or scrapped.

In the crushing department the original equipment consisted of a 42-inch primary and two 10-inch secondary gyratory crushers. Their minus-1½-inch products now go to two new 4- by 10-foot Allis-Chalmers Low Head screens. The plus-1-inch oversize from these goes to the two new Allis-Chalmers No. 322 Type R gyratory reduction crushers.

In the raw-grinding department the roughly-blended raw materials were fed to the first compartments of two 8- by 7- by 26-foot Allis-Chalmers Compeb mills. Two Wilfley pumps fed the product to two pairs of Hum-mer screens with 20-mesh wire screen cloth. The oversize went to the first compartment and the undersize to the second compartment of each mill.

In making the change each of the mills was converted to provide center discharge by installing a scoop feeder at the former discharge end of the second compartment and a division head at its former feed end. The product of the first compartment still goes to the screens, from which the oversize is returned to it. The screen fines now go to a Dorr bowl classifier from which the rake product is fed to the secondary compartment of the mill. The product of this compartment is pumped back to the classifier.

The overflow of the bowl classifier contains from 16 to 18 per cent. solids, of which 92 to 94 per cent. will pass a 200-mesh screen. A

The new boiler plant which supplies steam for power plant of Louisville Cement Corporation at Speed, Indiana.

The new stone-drying building and 15,000-ton stone-storage erected by the Santa Cruz Portland Cement Company.

The stone-stockpiling system at Santa Cruz plant with tunnel conveyor to drier building at left.

Wilfley pump feeds this to one of the two 150-foot diameter Dorr thickeners. At present the entire system is operated in two independent flows with the product of each bowl going to a separate thickener. If desired, however, the thickeners can be operated in series instead of parallel with one receiving the overflow from both thickeners. Their overflow is pumped to a storage tank on the side of the mountain above the plant from which it is fed back into the system.

The thickeners can produce a 71-per cent. solid product but are usually operated to hold this content at from 64 to 68 per cent. The underflow is finished slurry and is withdrawn at three points under each thickener into an individual sump. Two pairs of Wemco 4-inch slurry pumps are so inter-connected that they can circulate slurry from either sump back to either thickener. Their chief function, however, is to feed slurry to the eight slurry-blending tanks. At present the slurry composition in one thickener is kept a little high in calcium carbonate and that in the other a little low. Slurry is drawn simultaneously from them in the desired proportions to the blending tanks which are being filled and emptied in rotation.

The blending tanks have been equipped with an F. L. Smidth automatic air-agitating system which agitates each tank in rotation for 30 seconds in a 4-minute cycle. An Oliver American disk-type slurry filter is now being installed.

No important changes were made to the two Allis-Chalmers 11¼- and 10- by 240-foot rotary kilns except that natural gas is now being used as fuel instead of oil. Kiln A was equipped in 1935 with a grate-type clinker cooler. The rotary cooler on Kiln B was replaced early in 1942 by a 4½- by 30-foot Fuller grate-type clinker cooler. This is given much of the credit for a substantial increase in kiln capacity and the shock-cooling action has materially increased the grindability of the clinker. A drag-chain conveyor carries the cooled clinker to the storage building.

The power-distribution loss in this plant has been reduced by a revision of the electrical system which has also effected a material saving of vital copper wire. The former master transformer station now reduces all current to only 2,300 volts and further reduction is effected by individual transformers at each department.

Boat Loading One progressive cement company located inland built a plant for the bulk loading of ocean-going vessels with cement. The cement is hauled to this plant in special trucks from which it is discharged into a steel hopper with 55-degree sides to insure free flowing of the cement. Two Fuller rotary valves provide 4 square feet of discharge opening into the Fuller-Kinyon Type H 10-inch pump, which is driven by a 250-horsepower, 2,300-volt General Electric motor. This pump transfers the cement through a 10-inch pipe-line to the tops of the six 10,000-barrel reinforced-concrete storage silos. The distribution of the cement into the silos is controlled by Fuller valves and the air from the pumping system is released to the atmosphere through a Rees dust-collector.

Each of the silos has a self-cleaning conical steel bottom with a slope of 55 degrees. They are arranged in two rows and under each row is a track for a 10-inch Fuller-Kinyon Type H pump. Two Fuller rotary valves under each silo provide 4 square feet of opening to the pumps. These pumps are rated at 1,000 barrels per hour but have actually exceeded that figure.

The air for the pumps is supplied at 40 pounds pressure by two dual Fuller C200 rotary air-compressors. Each pair of compressors is driven at a speed of 575 r.p.m. by a 250-horsepower General Electric induction motor. Manzell forced-feed lubricators insure adequate lubrication at all times. The air intakes are equipped with Air-Maze filters. The discharge lines from these compressors are so arranged that the air from any of them can go to any of the

The original Santa Cruz crushing building with conveyor to stone-stockpiling system at left.

The two dual rotary compressors which supply air for cement pumps in new bulk cement boat-loading plant.

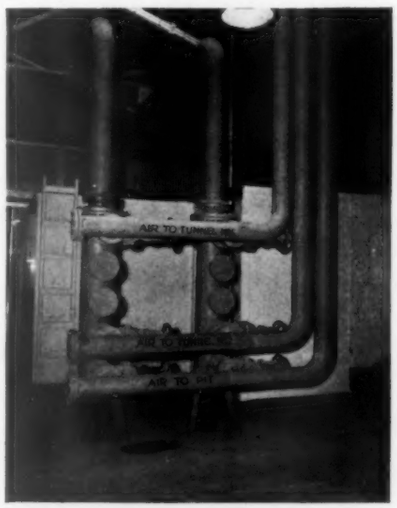
three pump locations. A Gardner-Denver 7½- and 5¾- by 5-inch compressor, driven by a 75-horsepower motor, is used for blow-off and is also connected to air-agitation rings around the conical bottoms of the silos.

Louisville Hardly a year goes by without some important improvement being made to the Speed, Indiana plant of the Louisville Cement Corporation. In 1942 it was a new boiler plant which replaced an old installation consisting of four 300-horsepower stoker-fired boilers.

The new installation consists of three Combustion Engineering Company, 38-800-pound per hour, two-drum, bent-tube boilers with water-cooled furnaces and Elesco superheaters. Designed for a maximum pressure of 275 p.s.i., these boilers are now operating at 165 pounds and will ultimately operate at 250 pounds pressure. Each boiler is equipped with 12- by 12-foot Combustion Engineering spreader-type stokers with steam-operated dumping-type grates, a Bayer soot-blowing system and a fly-ash return system. Republic-Smoot combustion control equipment is used. Normally only two boilers are on the line with the third in reserve.

Coal is conveyed from a track hopper to a 50-ton overhead bunker by a 9-inch "L"-type Redler elevator and is then distributed to the three stokers by a 1-ton-capacity Link-Belt weigh larry. Ash disposal is taken care of by a United Conveyor Corporation 8-inch Steamatic ash conveyor. A 2½-inch Steamatic vacuum-cleaning system is used for cleaning floors, walls, piping, etc. The smoke breeching for the three boilers exhausts into one of the kiln stacks.

The new boiler house has cinder-concrete-block walls capped with concrete at 16 feet above the operating floor. Above this point it is built of structural steel with Johns-Manville corrugated cement-asbestos siding. The roof is built of Federal American precast insulating concrete slabs covered with built-up gravel-surfaced roofing.



The air discharge lines from the two compressors in boat-loading plant.

Santa Cruz The Santa Cruz Portland Cement Company late in 1942 completed the latest of a series of improvements which have in recent years affected nearly every department of its plant at Davenport, California. In this latest step the old rock-drying and blending department was replaced by a new all-steel and concrete department with a capacity of 300 tons per hour. This has resulted in additional needed capacity, more economical operation, and better blending of the raw materials. The old department was operated until the new one went into operation and is now being torn down.

The crusher building was not changed. Its minus 4-inch product is discharged on the 36-inch by 282-foot belt-conveyor which is the first step in the new department. This in turn drops the stone on a 36-inch by 200-foot shuttle belt-conveyor set at right angles to it and 42 feet above the ground level. This discharges the stone at any desired point throughout a distance of 100 feet toward the drier building and 183 feet in the other direction. Different grades of stone are segregated in separate piles. The stone can also be discharged from the shuttle conveyor direct to the driers through chutes, but this is done only when the stone happens to be of the desired analysis.

Under the stock-piles is a concrete tunnel with 20 gates for the discharge of the stone on a 36-inch by 400-foot reclaiming belt-conveyor. Nine Jeffrey-Traylor vibrating feeders under selected gates blend the stone on the conveyor, which is inclined at its far end to discharge the stone through a split chute into the two driers.

These driers are 9- by 80-foot Hardinge Ruggles-Coles direct-fired rotary machines which are unlined but are equipped with lifters for their full length. They are fired with fuel oil by Ray burners through air-heating chambers and are driven by 125-horsepower motors through Pacific gear reducers. Each drier has a 55,000-c.f.m. Clarage Size 53 draft fan which draws the hot gases through a Multiclone dust-collector. Both fans exhaust to a Norblo dust-collector which was part of the old drier system. This dual collection keeps the new department practically dustless and is expected to prolong the life of the fans and piping considerably.

From the driers the dried rock passes over 3½- by 10-foot Symons (Los Angeles) two-deck screens. The high-grade coarser stone off the two

(*Continued on page* 83)

Universal Atlas' New Plant at Northampton*

The storage building with conveyor from secondary crushing and screening building to crushed stone distributing conveyor.

THE Universal Atlas Cement Company now has near completion at Northampton, Pennsylvania, its latest and most modern plant. It is the fifth to be built on its properties there since 1889. In planning this plant the company took into consideration the growing demand in recent years for cements of different chemical compositions for different uses. These are generally made by adding silica, iron, lime, etc., to the mixture at an added cost. Research carried on by the company proved the desirability of providing the necessary types of raw materials by a process of subtraction from the ample supplies of limestone on its property. The procedure adopted involves mineral separation by centrifugal sedimentation and froth flotation.

The quarried stone is now being loaded into railway cars by three 2½-cubic yard electric shovels, but the railway is to be replaced by trucks and 10-cubic yard side-dump semi-trailers. These will be hauled up a 10-per cent. incline 750 feet long by two electric hoists with electric-eye control operating a barney car but otherwise will run in and out of the quarry under their own power.

At the plant an automatic hook, controlled by the crusher operator, tips the trailer bodies and dumps the rock on a pan feeder. This provides an even feed to the 36- by 60-inch Fairmont primary roll-crusher which has a capacity of 400 tons per hour. The minus-8-inch crusher product is carried on a 36-inch by 305-foot belt-conveyor to the top of the screening and secondary-crushing building. There the rock is split over two 5- by 10-foot double-deck vibrating screens which scalp the plus ¾-inch oversize to the reversible hammer-mill used for secondary crushing. The product of this crusher is returned on a 30-inch by 110-foot belt-conveyor to the conveyor ahead of the screens.

The minus-¾-inch material falling through the bottom decks of these screens is carried on a 30-inch by 478-foot belt-conveyor to the storage building, a weigh-meter keeping a record of the amount of stone going to storage. The stone is discharged on another 30-inch belt-conveyor which has a movable tripper to distribute the stone as desired alongside the storage building which is 624 feet long and 100 feet wide and also has space for clinker, sand, iron ore and gypsum. A 15-ton traveling bridge crane with a 5-cubic yard clam-shell bucket distributes these materials in storage and transfers them to the proper mill-feed bins.

The cement rock is ground in two separate closed-circuit grinding units, each having a primary and secondary side. The primary ball-mill is 9½ feet in diameter and 8 feet 8 inches long, and receives its stone from a controlled-weight belt-feeder. It operates in closed circuit with a multi-zone rake classifier to which the slurry is fed by a sand

In this view are shown the two 80-foot slurry storage tanks, the two 200-foot thickeners, the ten slurry blending tanks and the cell house.

*Abstracted from a paper presented at the October 22, 1942, meeting of the Industrial Mineral Division, America Institute of Mining and Metallurgical Engineers, Bethlehem, Pa.

wheel. The coarse product of the rake returns by gravity into the mill. The overflow, containing the finer portion of the mill discharge, goes to the center of the 27-foot bowl classifier which is in closed circuit with the secondary mill. The particle size of this overflow can be closely regulated. The coarse material from the rake of the secondary classifier is fed by a sand wheel into the secondary mill, which is the same size as the primary mill, and discharges back into the bowl.

The material overflowing the bowls of both secondary classifiers contains from 85 to 87 per cent. water. It is pumped 1,000 feet to the 200-foot diameter cement-rock thickener.

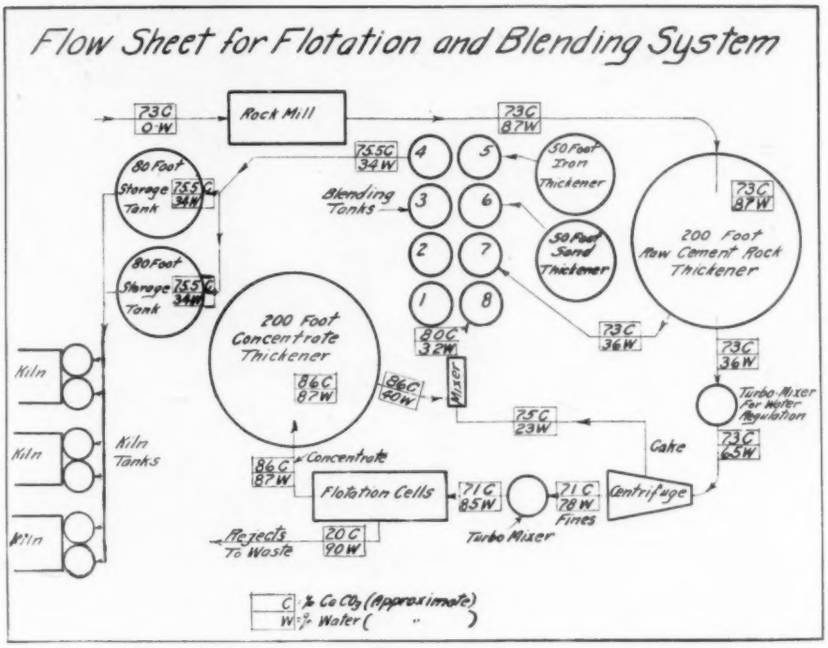
The sand and iron ore used in the manufacture of several different types of cement are separately ground in an 8- by 7-foot 8-inch ball-mill which operates in closed circuit with a bowl-and-rake classifier. Each material is ground to the desired fineness and is then pumped to its own 50-foot-diameter thickener near the rock thickener. From these thickeners the slurries are discharged into blending tanks.

The thickened rock slurry, containing about 36 per cent. water, is drawn from the center of the thickener at the bottom and is pumped either to blending tanks or to a 14- by 20-foot turbo-mixer tank for further processing. The clear water overflows back to the raw-grinding mills.

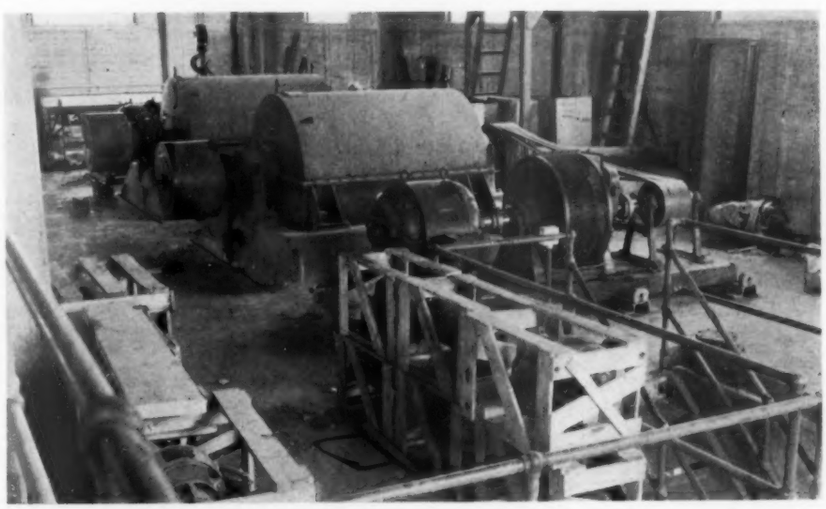
The cement rock in the quarry varies from 68 to 76 per cent. $CaCO_3$ with an average of about 73 per cent. The accompanying flow-sheet shows how this material is converted into a satisfactory raw mixture containing 75.5 per cent. $CaCO_3$.

In the turbo-mixer tank the thickener under flow is diluted to a water content of 65 per cent. and then passes through two 54- by 70-inch centrifuges which discharge the coarser material as a cake. The finer material, containing 71 per cent. $CaCO_3$ and 78 per cent. water, flows into a second turbo-mixer tank for dilution to a water content of 85 per cent. before being pumped to the flotation cells.

The seventy-two 66-inch flotation cells are arranged in four parallel rows of 18 cells each. Each can be operated as a separate unit or the flotation products from all four rows can flow together. The final product of flotation, which contains 86 per cent. $CaCO_3$ and 87 per cent. water, is pumped to the 200-foot concentrate thickener. The rejects of these cells, containing only 20 per cent. $CaCO_3$, are pumped to waste.



View inside cell house showing some of the seventy-two 66-inch froth flotation cells which reject unwanted ingredients of raw material.



The two 54- by 70-inch centrifuges which remove from the slurry the material to be treated in the froth flotation cells.

One of the two primary raw-grinding ball mills and the multi-zone rake classifier with which it operates in closed circuit.

The secondary crushing and screening buildings with conveyors from the primary crusher and to the storage building.

The two groups of 15 reinforced-concrete cement-storage silos with side chutes for loading bulk cement into cars.

The high-lime concentrate from the concentrate thickener, containing about 40 per cent. water, is pumped to a mixing tank where it is blended with the cake from the centrifuges which contains 75 per cent. $CaCO_3$ and 25 per cent. water. The mixture, containing about 80 per cent. $CaCO_3$ and 32 per cent. water, is then pumped to six of the eight blending tanks, where it is mixed with the 73-per cent. slurry from the rock thickener to make the desired mixture for kiln feed. The finished 75.5-per cent. slurry, containing 34 per cent. water, is blended in a sump and pumped into the two 80-foot storage tanks which supply the kilns.

If sand, iron or both are needed for special cements they are added in the proper proportions from the other blending tanks.

From these storage tanks the slurry is pumped into two kiln-feed tanks under the feed end of each of the kilns. It is then pumped into the constant-level basins of the filters, any overflow returning to the tanks. Each kiln is provided with two slurry filter units of the revolving-disk type. Each unit has 9 disks 8 feet 10 inches in diameter with a total filtering area of 936 square feet. The filters reduce the 36 per cent. moisture content of the slurry to 23 per cent. in the filter cake. The cake drops into a mixing conveyor from which it falls into the hopper of a plunger pump of the type used for freshly-mixed concrete. This discharges the cake by extrusion through a pipe into the kiln.

The plant will have four kilns which, because they are connected to waste-heat boilers, are shorter than most of the kilns recently installed in wet-process plants. They are 250 feet long; three are 10½ feet in diameter and the fourth will be 9 feet. They have all-welded shells with stiffening rings every 20 feet and each is carried on four box-type rings riding on solid forged rolls with water-cooled bronze bearings. Each kiln has two manholes located directly opposite each other and about 75 feet from the discharge end to facilitate the handling of the brick during relining. Each kiln is driven by a 125-horsepower d.-c. adjustable-speed motor through a speed-reducer.

The kilns are fired by unit mills which dry and grind the coal, the hot air for drying being drawn from the tops of the kiln hoods. The clinker from the kilns is discharged into air-quenching-type clinker coolers which discharge it into the proper section of the storage building. The clinker from each kiln is

(*Continued on page* 76)

Agstone Output Climbs in 1942; Truck Scarcity Hampers Deliveries to Farms

IN attempting to review the agricultural - limestone project for the year 1942, the author has thought best to base his statements upon conditions and experiences in Illinois, the state with which he is most familiar, rather than to speak in more general terms for the midwestern region as a whole. It is easier to be more specific and definite by so doing. However, most of the important developments experienced in Illinois apply in a general way to the midwestern region as a whole.

The previous year, 1941, was a record-breaking one as to the tonnage used, the final estimates for Illinois approximating 2,675,000 tons.

Early in the year 1942 it was confidently predicted by the various authorities that the year would exceed the record-breaking figures of 1941. However, difficulties in both production and transportation interfered quite seriously with what otherwise doubtless would have been a new record, so that some of these same authorities now doubt whether 1942 figures have quite equalled those of 1941. Not until somewhat later will all the reports be in and a dependable total determined.

The agricultural-limestone project was experiencing a very healthy normal growth without any governmental subsidizing or other artificial stimulation during the good agricultural years in the late 1920's. But even during the best of those years, 1928 and 1929, there were many farmers who still doubted the benefits and advantages claimed for the use of limestone by the more progressive farmers. With the coming of the federal government's Soil Conservation Program, involving as an essential factor therein the use of agricultural limestone and soil-building legumes, and the government's benefit payments as an inducement for such practices, the general acceptance by practically all classes of farmers of the agricultural-limestone idea became at last an established fact. (There always will be some who never will see the light.) These changes are important because they have changed the educational and promotional emphasis in the whole program. No longer is there the same need for educational efforts on behalf of the use of agricultural limestone. The educational work now is largely that of how, where, when and in what quantities to use it.

To-day some of the extension-department agronomists are much concerned over the fact that the companion practice of sowing nitrogen-gathering and soil-building legumes has not kept pace with the liming program. If the government's main objective during this war period, *i. e.,* maximum production of food crops through the establishment and maintenance of high soil fertility, is to be achieved, legume growing must go hand in hand with liming practices. The enormous demand for commercial nitrates of all kinds as essential in the production of war munitions has meant the suspension of the use of such nitrates in soil fertilizers. Legumes and stable manure are the only alternatives.

Legume pasture and hay have the added advantage of furnishing a highly nutritious stock feed for dairy and beef stock, thus conserving the grain crops for other uses.

Mention has already been made of the fact that production and transportation difficulties interfered during the year 1942 with supplying a tonnage equal to the demand. It is worthwhile to review these difficulties carefully, for they constitute the major problems to be faced in the coming year 1943 and the following years as well, until the war is ended and the need for America to produce maximum food crops has passed.

Let us first consider the difficulties encountered in production. The high pressure construction of some of the government's munitions plants created a very urgent demand for large tonnages of crushed stone for construction, fill and yard-surfacing purposes. So great was this tonnage demand that some of the larger producers of agricultural limestone had practically their entire output requisitioned under government war-plant contracts. Often government specifications required that all the natural "fines" be left in the product, precluding them from agricultural use. Removing these important quarries as sources of agricultural limestone threw heavy and unexpected demands upon other sources of supply, which latter already were well booked up with orders coming through their normal distribution channels and territories.

Most quarries experienced curtailment in their normal production because of a labor shortage, difficulty in securing repair parts for production machinery and from other unusual conditions which disturbed normal operations. For instance, one large plant, a prominent source of agricultural limestone, was kept busy during the latter part of the year furnishing fluxing stone for steel foundries whose product carries high priority. This quarry normally is operated in two levels, but fluxing stone is limited to one of these levels. When producing for the steel furnaces, only half of the quarry could be operated, and the output per hour was thus restricted. As the specification for the flux included everything down to ¼-inch material, very little was left from which to screen out agricultural stone, and no surplus oversize material was left available as feed material for reduction rolls to supplement the limited agricultural-size production.

Referring again to the labor shortage, this has operated adversely in more than one way. First, and directly, the shortage itself. Second, indirectly, the fact that most of the laborers taken in the draft were the younger and more able-bodied men, while the older and less able-bodied ones were left to do the work. Third, various quarries did not have enough men on their payrolls to operate more than one shift, therefore the only way in which the output could be increased was by overtime operation, which practice is limited under the law and entails additional cost per hour through overtime rates of pay.

Many of the previously established so-called "roadside" quarries found the year a banner one for them, as they were the recipients of some of the overflow business. However, this was true only in the case of quarry operations which had been established before the war period, and so were going concerns capable of full production. Others, which tried to

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make a start during or shortly before the war period, found many insurmountable difficulties, chief of which were, first, the inability to get the necessary new machinery (or repair parts for second-hand equipment being installed) and, second, inability to secure a sufficient force of workmen.

All in all, production experienced many difficulties and the total output for the state of Illinois as a whole proved unequal to the demand. The shortage of the supply at production points as compared with the demand was not apparently as great as actually it would have been had it not been for the fact that inadequate transportation smothered some of the demand before it could be evidenced in orders.

Transportation was the most difficult problem, in the fall months especially, and transportation threatens to become a worse bottleneck in 1943 unless special efforts are made to meet the difficulty adequately. In the first place, railroad equipment and service was unequal to the need because of the enormous burden put upon them by the needs of the war. In the second place, motor-truck transportation became a serious problem. Many trucks were eliminated from service for one or more reasons. Some of these reasons were:

(1) The truck itself wore out, or broke down and the owner was unable to secure repair parts.

(2) The owner-driver was taken in the draft and his truck lay idle as a consequence.

(3) Owners of several trucks found it impossible to secure drivers enough to keep them all going, and so had to keep some of them idle.

(4) Difficulty was experienced by some truck owners in securing necessary tires to keep their trucks rolling, so that they were disposed either to discontinue service or to limit the operation of the trucks to the most important uses, or such as would provide revenue for the round trip.

The suggestion has been put forth by some of the government A.A.A. authorities and some of the agricultural-extension authorities that one way in which the truck shortage can be mitigated somewhat is for the farmer using agricultural limestone to do his own spreading on the fields; the trucker thus would be allowed to limit his service to transportation either from the railroad car at the nearest local station or from the quarry production site. This is a good suggestion so far as it can be carried out. It should be adopted if, and to the extent that, it is possible to do so. The facts, however, would seem to indicate that very little relief can be secured in this direction. One of the most critical problems confronting the country to-day is the farm-labor shortage. The farmer himself is face-to-face with the demand to produce increased food crops and to do so with less hired help. Obviously he is not going to be in a position to take time out from his other regular work on the farm to take care of the spreading of limestone, for which service, during the past several years, he has come to depend upon the commercial trucker. Further than this, the average farmer does not have spreading equipment available on his farm, and it is doubtful whether he can secure such even through any coöperative or service-sharing plan.

The foregoing are but a few high spots in the difficulties that have been encountered in both the production and transportation phases of the agriculture - limestone project. They largely account for the reason that many farmers were disappointed in not securing the supply of agricultural limestone which they had definitely planned to use under the government's conservation program during the year. These difficulties, however, are not merely things of the past. With some change of emphasis they are increasingly going to be the problems confronting the project for the year 1943 and the years thereafter until normal times have been restored. Their elimination or mitigation by any and all possible means is of utmost importance. How, therefore, can these problems be solved or rendered less serious and hurtful?

First, consider the difficulties of production. The government itself has placed the production of food crops in the highest rank of importance under the war effort. It has emphasized in connection therewith the importance of high production per man and per acre, and, as a necessary corollary, the establishment and maintenance of the highest possible degree of soil fertility. By its own educational, promotional and subsidizing efforts it has recognized that agricultural limestone is at the very base or starting point of soil fertility. Therefore, very high rating for necessary machinery repair parts should be given to quarry operations producing agricultural limestone.

Producing quarries should be encouraged to turn out the maximum possible tonnage of agricultural limestone during the coming season. This, of course, means not only efficiency in management and output per hour, but also the increase, where possible, of the number of hours worked per week. As already noted, this will mean some overtime with the resultant higher unit rate of wages. This would be directly reflected in the average cost of production. Again, quarry operators, if equipped to do so, should be encouraged to reprocess other marketable sizes of stone intended for less important uses, by passing these sizes of stone through supplemental rolls or hammer-mills, reducing them to a satisfactory agricultural-limestone size. Here, again, costs are not only increased but duplicated to a considerable extent.

No quarry operator, no matter how patriotically inclined he may be, can afford to encounter these heavy extra costs to any great extent, for the purpose of thus artificially increasing the supply of agricultural limestone he can offer for sale for less or no profit—possibly a loss. It would seem that some adequate recognition should be given to these facts in the form of relief under the price ceilings which have been established automatically.

Through the efforts of the A.A.A. authorities at Washington what was intended to be a relief under the price-ceiling regulations was accomplished through *Amendment No. 9 to General Maximum Price Regulations.* Unfortunately, this amendment was established under the theory that some producers of agricultural limestone might find themselves in the unfortunate position of having a price ceiling automatically established on a subnormal basis of some condition in their local marketing activities in March, 1942, under which their price was *subnormal* at that time. There may be a few such cases, and Amendment No. 9 would be a welcome relief for such. However, a much more prevalent difficulty experienced among quarry operators is that of to-day's abnormal production costs, which would be thrown further out of line if they were to increase their production as much as might be physically possible, were it financially possible. Some further amendment would seem to be in order to take care of such cases without too much red tape, all in the interest of increased production and available supply.

Now, as to the outlook for transportation. Little can be said by way of suggestions for improvements in railroad service. The railroads are doing a remarkably fine job in their

endeavor to meet a well-nigh impossible situation. When it comes to motor trucks, however, there would seem to be possibilities for relief. In the first place, agricultural limestone should be definitely and specifically classed with such a high rating as a war-essential commodity that truck owners and operators would experience little difficulty in qualifying for prompt service in repair parts and tire replacements as well as gasoline rations. Second, road-worthy trucks which are standing idle to-day through lack of drivers should be searched out by a systematic survey, and their active service re-established either by assisting the owner to secure the necessary driver help, or by some proper governmental authority taking over the truck on a fair compensation basis, and assigning it to some other trucker who has been idle because his truck had worn out or otherwise become permanently unserviceable.

Most careful supervision of distribution and transportation should be established by the quarry operators and the county A.A.A. authorities so that, to the extent possible, railroad transportation may be used from the quarry to the nearest local station, shortening the truck haul to the farm. In many cases a direct truck haul from the quarry to the farm will be found most economical, and should be required.

Cross-hauls by competitive commercial truckers should be eliminated and one-way hauls should be held to the minimum through a systematized development of revenue transportation in the otherwise-empty return movement.

Efficiency in truck transportation will of necessity have some bearing upon the type of truck used and the type of spreader utilized for distribution on the fields. The original spreader was an end-gate affair designed for horse-drawn wagons; the farmer met his carload shipment at the local siding, and took care of the transportation from that point to his fields. With the transition from wagon hauls to truck hauls this type of spreader evolved into the so-called trailer "whirligig" type—a small, light, two-wheeled affair (sometimes steel-tired, sometimes pneumatic-tired), which could be fastened on behind the truck, and fed by hand shoveling from the truck body into the spread hopper. Broadcasting of the material on the soil was accomplished by means of whirling disks, gear-driven from the supporting wheels. (Fig. 1.)

Figure 3.

This type of spreader still has the advantage of being adaptable to any truck which can be used on the highways for other as well as agricultural-limestone transportation, and which is sturdy and flexible enough to go on farm fields with its load. It has the further advantage of not constituting itself a part of the "dead load" to be transported back and forth between the source of material and the farm. This spreader, however, has the disadvantage of requiring two or more men—one to drive the truck and one or more to feed the material into the spreader.

A type of spreader (Fig. 2) which is intended to eliminate the need for an extra man or men with shovels on the truck is designed for use with metal dump-body trucks. A horizontal shaft running across the rear of the truck just below the dump gate is equipped with vertical propeller-type blades, and is driven by a direct take-off from the chassis. So far as possible the rate of feed is regulated by the opening in the end gate and the elevation of the dump body. Obviously this type has many advantages. It has some disadvantages as well. The dump body does not lend itself so readily to reciprocal hauls for other commodities (using the truck profitably in both directions), especially where

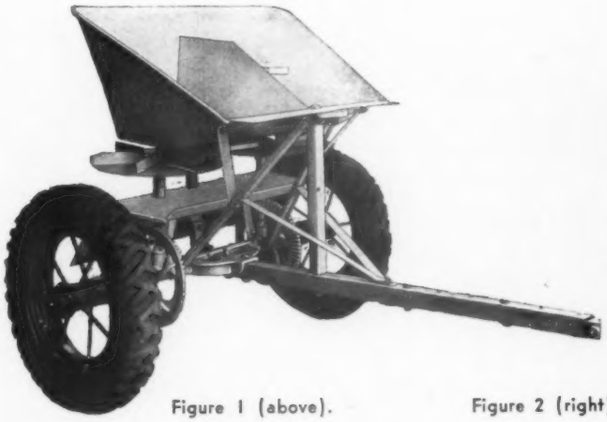


Figure 1 (above).

Figure 2 (right).

the distance covered by the haul is considerable. This type of spreader, therefore, must largely be limited to the sole purpose of hauling and spreading agricultural limestone.

Limitation to one kind of use only, applies . . . to another type of spreader (Fig. 3.) This type consists of a special trough-shaped body. The material is fed down from the inverted apex bottom to a conveyor which in turn feeds it to revolving distributor disks at the rear. Both the conveyor and the distributor equipment, as a rule, are run by a direct take-off from the chassis. In a few advanced models there is a separate power drive for the distributor, in which case it is possible to keep the distributor-mechanism speed constant so that the breadth of the distribution strip on the field is uniform regardless of the speed of the truck. At the same time it is possible to maintain a direct relationship between the speed of the truck and the rate of feed, so that the strip is given the same rate of application per lineal distance advanced by the truck regardless of the truck's speed.

It would seem important that the practice of using such types of transporting equipment as semi-trailer livestock trucks is the most desirable one where such a practice is possible. In this way the commercial trucker makes good use of his equipment in both directions, taking a load of livestock to market, returning to the farms with limestone picked up at some quarry near the live-stock market district. Of course, this is not possible in all districts, only in those where livestock markets and commercial quarries are relatively close to each other. Fortunately, this situation is true in many important districts, such as Chicago, East St. Louis and Indianapolis. Semi-trailer livestock trucks, however, are not well adapted to use on farm fields, and the material, therefore, must be transferred at the farm to some other truck body better adapted to use on the fields. For such use any one of the three types of spreaders, described is well adapted. Those shown in Figures 2 and 3 can be used as transfer vehicles, while that shown in Figure 1 can be some sturdy straight-body type of truck.

These facts about spreaders may not seem to be very closely related to the quarry industry, but they are going to play a very important part in deciding how adequate and successful the agricultural-limestone project will be in practice during the coming 1943 and the years to follow. The quarry operator should take a very active interest, therefore, in helping to see that right ideas are appreciated and right practices established.

There is little change in the regulations established by the A.A.A. for 1943. The A.AA. program has had sufficient time now to search out its major weaknesses and so far as possible correct them.

If the problems which the author has attempted to outline in this article can be met and solved to a large extent, there is little doubt but that the demand during the coming year or years will bring new records.

It is important that each and all of the various agencies and interests actively connected with the agricultural-limestone project should endeavor to become acquainted with, and appreciate, the problems confronting the other groups; and that they should all, so far as possible, get together and coöperate in making the project successful.

Universal *(from page 72)*

kept in a separate storage section so that clinker for special cements can be made in one or two kilns at any time. A separate crane, similar to the one handling the raw materials, distributes the clinker in the storage and feeds it and the gypsum into the feed hoppers of the clinker-grinding mills.

The clinker-grinding building contains three separate and complete grinding units, each consisting of a preliminary ball-mill and a ball-peb mill for finish grinding. Belt-feeders under each bin deliver the proper proportions of clinker and gypsum for each unit into a bucket-elevator feeding each of the 9½-foot by 8-foot 8-inch Preliminators. Elevators feed the products of these mills into the ball-peb mills for final grinding. These are two-compartment mills 8 feet in diameter and 30 feet long. The discharge of each mill is elevated to two air-separators from which the coarser material is returned to the mill. The product of the separators is finished cement which is carried by a common screw-conveyor to a bin over a Fuller-Kinyon cement pump.

The cement is pumped to the cement storage which consists of two groups of 15 reinforced-concrete silos. Each group is arranged in three rows of five bins and has 8 interstitial bins. Each silo has a conical steel self-cleaning hopper bottom. Cement pumps mounted on trucks can be moved on rails under each row of silos to draw cement from any of the bins or their interstices. These pumps feed the cement to the pack house but can also transfer it to other storage bins.

The pack-house, which is between the two groups of silos, has four automatic bag-packing and weighing machines. The filled bags are carried on a wire-mesh belt to either side of the building for trucking into cars. Bulk cement is loaded at a separate building into cars standing on a track scale. The outside silos in each group also have side chutes from which bulk cement can be loaded directly into cars.

The electric power required for the operation of this plant will be generated by two 6,250-kv.-a., three-phase, 60-cycle, 2,400-volt machines, each driven by a direct-connected steam turbine operating at 3,600 r.p.m. on a steam pressure of 250 p.s.i. The steam is provided by three vertical water-tube boilers operating on waste heat from the kilns and one auxiliary stoker-fired boiler.

All the power generated is transmitted through two 2,300-volt feeder lines to the mill electric substation which is in a building housing the numerous control boards required to operate the entire plant. The current is transmitted from this substation at 2,300 volts to 11 transformer banks located at convenient points to reduce it to 440 volts for most of the motors.

All the plant buildings are of reinforced concrete and steel construction. In addition to the buildings already mentioned there is a machine shop and store-room and a locker and wash room, and an office and laboratory building of architectural concrete.

Completes Survey of Dolomite Resources

A timely survey of the high-grade dolomite deposits of the United States has been completed by the Bureau of Mines in response to an increasing demand for dolomite as a source of magnesium, the new lightweight metal used in airplanes, and for dolomite refractories in metallurgical furnaces.

Formerly regarded as a variety of commonplace limestone found in nearly every state of the union, dolomite recently has attained prominence chiefly because, as an ore of magnesium, it is needed in vast quantities for the manufacture of airplanes and other war machines.

Metallurgical industries working at top speed to turn out alloys and other metals vital to the war program also are demanding more dolomite for use in furnace linings.

Sand and Gravel · 1942

THE total volume of sand-and-gravel production in 1942 from all indications exceeded the 1941 volume of 288,715,000 tons, as compiled by the United States Bureau of Mines, by about 7 per cent., setting for the fourth successive year a new all-time high record of production. The volume of production in 1940 was 238,308,000 tons, in 1939 it was 226,008,000 tons and in 1929, the pre-depression record year, it was 222,571,905 tons. As in 1941, this 1942 increase in production was due almost entirely to the huge requirements of our war-construction program. According to one authority, over 78 per cent. of the production was used for such work.

It is apparent that the present high rate of production will carry well into 1943 but a retardation is expected after the middle of the year when most of the projects now under way or planned will have been completed. Any relaxation of the present restrictions on private construction would, of course, improve the prospects considerably.

One of the outstanding developments of the year was undoubtedly the manner in which established producers with permanent plants located in areas which normally have a steady demand entered into the production of aggregates for war projects with portable or temporary plants. In this way many of them more than compensated for a serious drop in production at their permanent operations. In one important west-coast area the demand from established plants was only half that in 1941 but the companies in this area more than made up for this loss through the operation of temporary plants over a wide area.

These portable and temporary plants were kept operating at top capacity throughout the year. Many of the more fortunately located permanent plants also operated around the clock and 7 days a week to meet the demand. Those permanent-plant operators located in areas where there were no war projects of any kind within economical shipping distance had to be satisfied with the small amount of private demand.

In spite of the dampening effect of priority restrictions, there were probably as many new plants built in 1942 as in a normal year but most of them were comparatively small operations of the portable or temporary type. Most of these plants were sold to or through the government and are being used in the construction of vital military projects both here and abroad. Censorship regulations withhold any details about them except the fact that they are making an important contribution to our eventual victory in this war and that they have been responsible for a large part of the year's production.

American Aggregates The American Aggregates Corporation in February 1942, at Green Oak, near Brighton, Michigan, put in operation the latest of a series of new plants it has built in recent years. This plant replaced an old operation of smaller capacity and was completed in time to supply much of the aggregates needed for the huge Willow Run bomber plant and other important defense projects. All of the latest refinements of design found in the company's other plants are incorporated in this one.

A 5-cubic yard Bucyrus-Erie electric dragline excavates the material from the deposit and drops it into a hopper. This loads 60-ton hopper-bottom cars which are hauled to the plant by a Diesel-Electric locomotive made from an interurban car and powered by two Cummins 250-horsepower engines. The material is discharged from a trestle over a 220-foot concrete reclaiming tunnel for reserve storage. Usually enough material is discharged direct into a track hopper at the end of this tunnel to maintain a steady feed into the plant. A Jeffrey-Traylor vibrating feeder discharges on the first of two 36-inch belt-conveyors to the screening building.

A 5- by 10-foot Simplicity 2-deck screen scalps 4- to 8-inch oversize on

The new Green Oak, Michigan, plant of the American Aggregates Corporation with receiving trestle in foreground.

a picking belt to an Allis-Chalmers Number 7½ K gyratory crusher. The products of both machines go to a 4-foot Symons short-head cone crusher for final reduction.

The crushed gravel is elevated to a 5- by 10-foot, three-deck Allis-Chalmers Low Head screen from which the oversize is returned to the Symons crusher. The two coarse sizes produced go direct to storage. The material falling through the bottom deck goes to another identical screen which discharges three

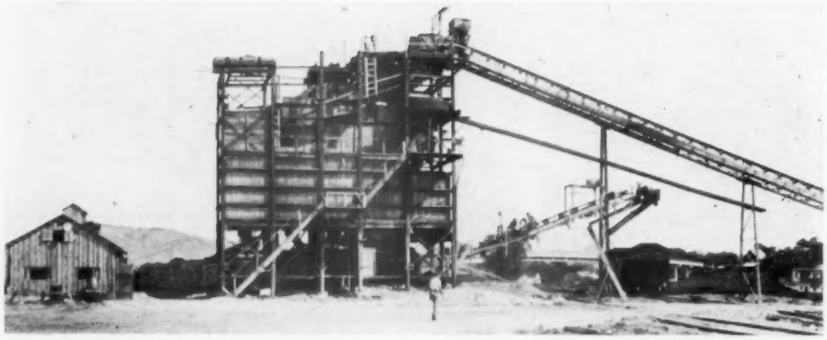
Drag-line feeding movable carloading hopper at Green Oak plant.

finer sizes of crushed gravel into storage.

The minus-¼-inch material falling through the bottom deck of this screen goes to a 3- by 6-foot Simplicity single-deck screen. The 1/10- to ¼-inch material off this screen is conveyed to storage. The minus-1/10-inch dust goes into a sump from which it is pumped over the two sand screens to be described.

The minus-2-inch gravel falling through the bottom deck of the scalping screen goes to a pair of 5- by 12-foot Simplicity 3-deck screens. The two coarse sizes of gravel from these screens go through separate Allswede scrubbers followed by Low Head screens each one of which makes three sizes of gravel which go direct to storage. The 1/10- to ¼-inch material from this screen goes to a pair of 4- by 8-foot Simplicity screens which makes two sizes for storage. The minus-1/10-inch material goes to a pair of 30-foot Greenville sand-drags and then to storage. The overflow from the drags goes through settling tanks from which the extreme fines are pumped to the sand-stockpiling conveyor.

All these materials are stored in 11 compartments over a tunnel in which is a 30-inch by 450-foot reclaiming belt-conveyor. This can discharge the single or blended sizes

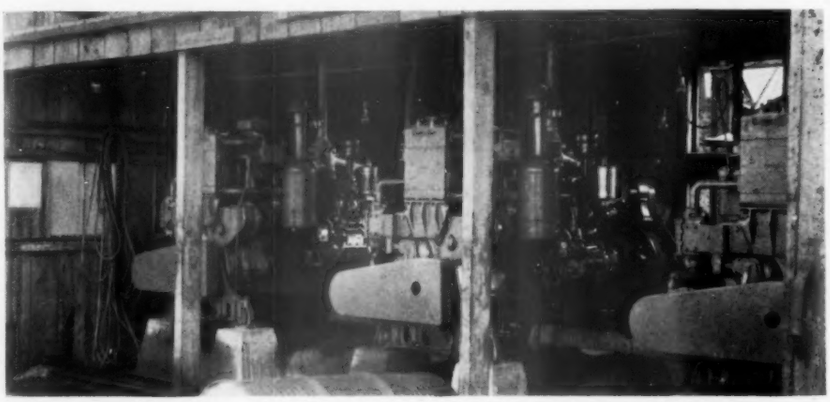


Birmingham Slag Company plant at Calhoun, Tennessee, which is supplying material for two TVA dams.

of material on a Simplicity shaking screen or direct on belt-conveyors running in one direction to truck-loading bins and in the other direction to car-loading bins.

Birmingham Slag The Birmingham Slag Company has been an important factor in the production of aggregates for many vital projects in the south, especially in connection with a number of the TVA dams. From various portable plants it has in the past few years supplied millions of tons of aggregates for these dams. Its latest plant at Calhoun, Tennessee, has nearly completed the production of approximately 1,000,000 tons of sand and gravel for the construction of the Ocoee Number 3 and Appalachia Dams. This plant went into operation in March 1942. It is located on the Hiwassee River, 20 miles from river deposits in Chickamauga Lake. The material is brought to the plant in barges for processing and the finished products are shipped by railway. The plant has a capacity of 400 tons per hour.

The material is taken from the lake by a dredge equipped with a 16-inch Amsco pump and a rotary cutter. At the plant the 300-ton barges are unloaded by two cranes which discharge the material into a hopper under which is a Jeffrey-Traylor vibrating feeder. A short conveyor feeds the material to a scalping screen from which the oversize goes into crushers which can be by-passed if desired. The crusher and screen "throughs" are carried on another belt-conveyor to the screening building. The sizing is done by a pair of 4- by 12-foot Tyler Ty-Rock two-deck screens followed by two 4- by 12-foot Allis-Chalmers Low Head two-deck screens. These, with two 10-foot sand-tanks, make the three grades of gravel and the sand required. The plant has storage bins of limited capacity from which the material is loaded into cars at the rate of 1,000



The three Diesel-generator sets which supply the power for the Birmingham Slag Company's plant.

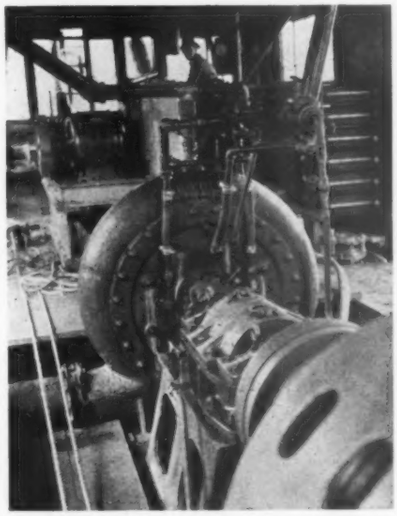
tons per hour by two 30-inch belt-conveyors. All the conveyors in this plant are equipped with Continental Gin Company idlers and pulleys. The power for operating this plant is supplied by three Caterpillar Diesel-generating sets.

Montgomery Gravel The Montgomery Gravel Company, a subsidiary of the Birmingham Slag Company, built a new 400-ton per hour plant near Montgomery, Alabama, to meet the

demand for sand and gravel which was exceeding the capacity of its existing plant there. The excavating is done by a Lima Diesel drag-line with a 3½-cubic yard Hendrix bucket and the material is hauled to the plant by a fleet of trucks. A grizzly over the 75-ton hopper removes the plus-3-inch gravel and a 30-inch by 240-foot Link-Belt conveyor carries the finer material to the dual screening plant. The material is spread with water to a pair of stationary screens which remove part of the sand and water. The gravel from each screen goes to a 5- by 10-foot Tyler Ty-Rock 3-deck screen and each of these produces three similar or different sizes of finished material. The products drop into bins for direct loading into cars.

The plant is designed for the retention of any desired percentage of the sand fed to it. A Wood Auto-Vortex classifier is used to save considerable 50- to 100-mesh sand along with coarser fractions. All the water overflow and waste from this classifier and from other parts of the plant flows into a sump from which it is pumped to waste by a 10-inch Amsco Type H pump.

Western Indiana Gravel The Western Indiana Gravel Company more than doubled the capacity of its Leesburg, Indiana, operations recently by the erection of a new all-steel plant and a modern hydraulic dredge. The plant replaces an old wooden structure which had been in use for many years and the dredge replaced a cableway-excavator system which had reached its limit of economical operation. A feature of the new plant is the large dewatering station designed to save all the fines possible, as sand is the principal product of the plant. Also notable is the fact that the increase in capacity of the plant has not required any additions to the operating crew.



The 10-inch pump in the new Western Indiana Gravel Company dredge.

The new Sturm & Dillard Company gravel plant near Syracuse, Indiana with dewatering sump at right.

The dredge has a 20- by 40-foot American Steel Dredge Company hull and an Amsco 10-inch counterflow pump. An American 3-drum hoist operates the nozzle and the shore lines. The discharge line consists of 10-inch Naylor spiral-welded pipe and this discharges the material into a bin on shore from which it flows over an inclined gravity screen. The plus-½-inch gravel goes into a bin and the finer material falling through the screen goes into the dewatering bin. The overflow from this bin goes back into the pond.

The material from this bin and the gravel are discharged on a 280-foot belt-conveyor which carries it to the top of the screening building. There a 5- by 12-foot Gyroset 3-deck screen makes three grades of sand which go to settling tanks and then into bins. The plus ⅜-inch oversize from this screen goes to a 4- by 8-foot Tyler Niagara double-deck screen, which makes three sizes of gravel that are also discharged into bins.

At the same time the company also improved its plant at Anderson, Indiana, by the installation of new bins and a 4- by 10-foot Gyroset screen. The latter replaced revolving screens.

At its LaFayette, Indiana, plant a 24-inch by 600-foot belt-conveyor was installed to bring material from the pit to the plant. This replaced a locomotive and cars formerly used for this purpose.

Sherman Sand The great increase in the demand for aggregates caused by the war program was the reason for the expansion program of the Sherman Sand & Stone Company of New Britain, Connecticut. This program included a new ¾-cubic yard Bucyrus-Erie shovel for stripping and loading in the gravel pit, a new plant equipped complete by the Iowa Manufacturing Company, new screening equipment in a crushed-stone plant, and other improvements.

The shovel loads Ford trucks equipped with 4½-ton Gar Wood rear-dump bodies. These feed a plant hopper which has a grizzly to reject the small amount of gravel over 4 inches in size. A feeder and belt-conveyor are followed by a 3- by 12-foot double-deck screen which diverts the sand to a drag-dewaterer. A belt-conveyor discharges the sand on a stock-pile.

The Sherman Sand & Stone Company's new plant.

The material passing over this screen is conveyed to a 3- by 8-foot Allis-Chalmers Aero-Vibe double-deck screen which makes three sizes of gravel.

Sturm & Dillard The Sturm & Dillard Company early in the year replaced with a new plant one which had been in operation near Syracuse, Indiana, since 1923. Railroad ballast had always been the most important product, but the new plant was designed so

that production could be concentrated when necessary on commercial crushed and uncrushed aggregates. The deposit near the old plant had been worked to the limits of economical operation and the new plant was so located that sufficient material for years of economical operation is available. This plant was built during the winter largely by the company's forces from designs furnished by Meckum Engineering, Inc. It is notable for its compactness and the fact that no belt-conveyors are used. The building is built entirely of concrete and steel.

The dredge used at the old plant was retained and the only change of importance was the conversion of the original 12-inch Amsco pump to the counterflow type. The dredge is equipped with a 65-foot Eagle Swintek screen-nozzle ladder. At the

The 12-inch dredge pump at the Sturm & Dillard plant.

plant the dredge line discharges over a double-deck gravity screen with a ⅛-inch bottom deck from which the "throughs" are flumed to waste. This removes a large percentage of the excessive amount of fines in the raw material. The material passing over this screen goes into a sump from which the overflow is flumed away.

The new plant of the Builders Sand & Gravel Company built primarily to supply needs of a concrete-products plant.

A 70-foot Link-Belt bucket-elevator feeds the material from the sump to a 4- by 8-foot Simplicity triple-deck vibrating screen. The two lower decks of this screen make finished sizes of gravel which are chuted into bins. The gravel off the top deck goes to a 6-inch Allis-Chalmers gyratory crusher. The crushed gravel is elevated to a 3- by 6-foot 4-deck Simplicity screen which discharges four grades of crushed gravel into bins. These may be stored separately or combined with the same sizes of uncrushed gravel.

The material falling through the bottom deck of the scalping screen, usually minus-1-inch, is sized by a pair of 4- by 10-foot Simplicity 4-deck screens. These discharge four fine sizes of gravel into bins. The minus - ⅛ - inch material falling through the bottom decks of these screens and of the two crushed-gravel sizing screens goes to four Link-Belt settling cones which make both concrete and masons' sands.

Every precaution is taken in this plant to insure the making of a clean product. Any dirt not removed in the dredging and in the dewatering and elevating operations is removed by sprays on each of the screens, at the boot of the crushed gravel-return elevator, and at the loading chutes.

Builders' Sand Because the demands of the concrete-products plant of the Spicklemier Fuel & Supply Company at Indianapolis require as much as 300 to 400 tons of aggregates per day, the concern formed the Builders Sand & Gravel Company and erected a new sand-and-gravel plant which was completed in 1942. Located near the northeastern limits of the city, the plant has an hourly capacity of about 150 tons, of which 60 per cent. is sand.

The deposit covers about 250 acres and trucks, loaded by a Lima 101 gasoline-powered drag-line with a 1½-cubic yard bucket, bring the raw material to the hopper of a field conveyor which supplies the 251-foot plant conveyor. A floating field conveyor will eliminate the truck haul later on.

A 4- by 24-foot Telsmith revolving screen, equipped with a 9-foot scrubber section and a 6-foot sand jacket, makes the initial separation. The primary crushing is done by a Number 924 Cedar Rapids jaw crusher, a Number 322 Allis-Chalmers gyratory crusher making the secondary reduction. The final sizing is done by Simplicity and Cedar Rapids double-deck screens. Three Cedar Rapids sand-drags and a Number 8 Telsmith settling tank make the sand. Eight monolithic concrete truck-loading bins have a total capacity of 2,000 tons of finished material.

The Sturm & Dillard dredge which is equipped with a screen-nozzle ladder.

Ferry & Polk One of the numerous portable-plant operators who have played an important part in the construction of many of the smaller projects which form an important but little-publicized part of our war effort is the firm of Ferry & Polk of Glendale, California. This company had engaged in street and highway paving work for many years, producing the needed aggregates in most cases with portable

plants. Two plants are now being kept busy on war projects and as soon as a job is completed the plant is moved to another.

One of the company's plants has been working 12 hours daily and 7 days a week to supply 150,000 tons of sand and gravel for a bomber base near Santa Maria, California. About 50,000 tons of this material is concrete aggregate and the remainder is pit-run material. In the former material all the gravel must be reduced to under 1½-inch in size and in the latter to under 1 inch in size. The river bed deposit contains about 60 per cent. of sand and much of this must be wasted when concrete aggregates are being produced.

These conditions and requirements called for an unusual plant arrangement in two sections. The first and main section is a Cedar Rapids 1036-4020 Super-Tandem portable crushing-and-screening plant and the second section is a Madsen washing plant which is used only when concrete aggregates are being produced. Loading in the pit is done by Bay City and Koehring drag-lines using ¾-cubic yard Esco buckets. Trucks haul the material to the plant.

A belt-feeder discharges the material from the plant hopper on a belt-conveyor feeding a 2-deck screen. When pit-run material is being produced the plus 1½-inch gravel off the top deck goes to a 9- by 36-inch jaw crusher and the 1- to 1½-inch material off the bottom deck goes to a 24- by 40-inch double-roll crusher. The minus-1-inch product of both crushers is fed by a transfer wheel back to the conveyor ahead of the screen. The minus-1-inch material falling through the bottom deck of the screen is carried on a belt-conveyor to a 50-ton Cedar Rapids steel bin for loading into trucks. The output of this material is about 300 tons per hour.

The Ferry & Polk portable plant which supplied the aggregates for a bomber base in California.

When only concrete aggregates are being made, the roll-crusher is by-passed and the minus-1½-inch material is chuted from the last-mentioned conveyor to a Barber-Greene belt-conveyor feeding the washing plant. This conveyor discharges the material on a Symons 2-deck screen, which is equipped with washing sprays and makes the required sand and 1½- and ¾-inch sizes of concrete gravel. When producing this type of material alone, the plant output is about 200 tons per hour.

Sometimes it is found desirable to produce concrete aggregates and pit-run material simultaneously. In this case the crushing plant produces minus-1-inch material which is split between the pit-run loading bin and the washing plant in the desired proportions. The washing screen then makes only washed sand and ¾-inch gravel and a small amount of ¾- to 1-inch gravel which is sold as drainage rock. The washed materials are stored in a 4-compartment bin and excess sand is stock-piled and later reloaded by a Trackson Traxcavator mounted on a Caterpillar tractor.

Hamilton Gravel The Hamilton Gravel Company, Hamilton, Ohio, had operated the same plant for 20 years and decided to build a new one just about the time when new equipment became hard to get. This did not stop them and the new plant was built with the equipment from the old plant. When new equipment can be obtained, it will be incorporated in this plant, which is built almost entirely of reinforced concrete.

A Sauerman 1½-cubic yard slack-line cableway excavator is used to dig material from the bed of the Miami River. This discharges it

This tractor-mounted shovel loads trucks at Ferry & Polk plant.

over a 5-inch sloping-rail grizzly which rejects the oversize gravel. The minus-5-inch material goes to a 3- by 6-foot Simplicity 3-deck screen which usually makes 1½-, ⅜- and 3/16-inch sizes of gravel. The oversize from this screen drops into a 4-foot Symons cone crusher from which a chain-bucket elevator feeds it back to the top of the plant.

The 1½-inch material off the second deck goes into an Eagle screw washer which removes clay, twigs, etc. This is then discharged through a revolving spout into any of these bins.

The crushed gravel is discharged

Conveyor to the new Builders Sand & Gravel Company plant. Future floating field conveyor is at right.

from the elevator over a 3- by 6-foot Simplicity two-deck screen. This usually makes ¾-inch gravel and sand which are discharged direct to bins. The oversize from this screen is returned to the crusher. The plant capacity at present is about 65 tons per hour.

Other New Plants The Ferryview Sand & Gravel Company built a new plant at Rochester, Michigan. Included in the equipment is a Simplicity screen, a Cedar Rapids crusher, and an 8-inch Meckum dredge pump.

J. Floyd Malcolm, Brownwood, Texas, bought a new Universal 880

Conveyor feed system which supplements cableway excavator at Myers Gravel & Sand Company plant.

The new all-concrete-and-steel plant of the Hamilton Gravel Company.

Super Senior Gravelmaster portable crushing-and-screening plant to produce material for an airport job there. This machine is producing over 300 cubic yards per hour of minus-2-inch material. The equipment in this plant includes a 10- by 36-inch jaw crusher, a 40- by 24-inch roll-crusher and a 4- by 12-foot, 2½-deck Universal Simplicity screen. It is powered by a Caterpillar D13000 engine.

New sand-and-gravel plants were also built by the Albany Sand & Gravel Company at Sweet Home, Oregon; the Acme Sand & Gravel Company, San Antonio, Texas; the R. E. Janes Gravel Company, Austin, Texas; Edwin D. Neeley, Waco, Texas; the Concrete Materials Company, Byron, Illinois; the Amory Concrete Gravel Company at Amory and Columbus, Mississippi; the Triangle Rock & Gravel Company near Victorville, California; the Yazoo Tennessee Gravel Company near Memphis, Tennessee; the Moraine Sand & Gravel Company near Dayton, Ohio; the Lyman-Richey Sand & Gravel Company at Big Spring, Nebraska; the Price Brothers Company at Dayton, Ohio. Some of these are temporary plants supplying materials for war projects.

Myers Gravel & Sand Early this year the Myers Gravel & Sand Company was faced with the fact that its sand-and-gravel plant near Anderson, Indiana lacked the capacity to supply the greatly-increased demand for aggregates in this area. The plant, built only 3 years ago, was supplied with raw material by a slackline-cableway excavator and this limited its capacity. In order to increase the feed to the plant a new pit was opened. A drag-line now loads material into trucks, which dump from a ramp into a hopper fitted with a Pioneer grizzly feeder. The oversize gravel goes through a 15- by 36-inch Diamond jaw crusher and the undersize is discharged on a 24-inch by 275-foot Pioneer belt-conveyor for transfer to the top of the plant.

The material from this new system and that from the cableway excavator are processed together. Additional capacity in this department was provided by the installation of a third Simplicity vibrating screen. Secondary crushing is done by a 12- by 16-inch Universal jaw crusher. This arrangement also made it possible to produce 100 per cent. crushed gravel. Five new cylindrical steel storage bins were also installed. The capacity of this plant is now about 150 tons per hour.

The portable crushing-and-screening plant with which J. Floyd Malcolm produced materials for airport construction.

Lawrence Stone A few years ago the Lawrence Stone & Gravel Company installed at Blenheim, South Carolina, a new sand-and-gravel plant but supplied it from the old dredge. It was not long before it became apparent that this dredge was unable to supply the plant with enough material to keep it operating at capacity. Early in 1942 the installation of a new dredge increased the output to 150 tons per hour, double the former output. The dredge has a 12-inch Georgia Iron Works pump and an Amsco revolving cutter head. At the same time a stationary screen was installed to dewater the gravel and remove excess sand.

Other Plant Improvements The Steers Sand & Gravel Corporation at Northport, Long

Island, installed a 25-foot Hardinge hydro-classifier and a screw-dewaterer. These recover 48- to 200-mesh sand from the 3,000 gallons of water per minute overflowing the sand cones, which were described in the November, 1940, issue of PIT & QUARRY.

The Harry J. Campbell Sons Company, Towson, Maryland, installed a 30-foot heavy-duty McLanahan & Stone log-washer.

The Material Service Corporation, Chicago, installed two 30-foot McLanahan & Stone log-washers.

The C. W. Roberts Sand & Gravel Company, Dallas, Texas, moved its plant to a new location and installed a new Pioneer vibrating screen.

Defense orders were responsible for the re-opening of the Afton, Wisconsin, plant of the Central Lime & Cement Company, which had been shut down for three years.

The George Haiss Manufacturing Company reports that it shipped many bucket loaders and other equipment to government agencies, contractors and producers for use on construction jobs in this country and overseas. These projects included airports, military and naval bases, and war production plants.

The Simplicity Engineering Company reports that it sold Simplicity gyrating screens in numbers ranging from one to eight machines in 152 new plants operating in the aggregates industries during the past year. In addition many sales were made to existing plants in 65 per cent. of which Simplicity equipment had been previously used.

The Stedman's Foundry & Machine Works sold many crushers to aggregates producers during the year. These are producing sizes of material ranging downward from 1 inch maximum.

The Deister Machine Company reports numerous installations of its screens in sand-and-gravel plants in all parts of the country engaged in furnishing material for defense-plant construction. These screens range in size from 3- by 6-foot to 4- by 12-foot and had from one to three decks each.

The Kirkwood Sand & Gravel Company, St. Louis, Missouri, installed a Sauerman cableway excavator and washing and conveying equipment in the plant recently taken over from the Independent Sand & Gravel Company at Sterling, Kansas.

The White Hill Sand & Gravel Company, Salt Lake City, installed a Deister Machine Company 4- by 10-foot Plat-O double-deck screen.

The Cape Girardeau Sand Company, Cape Girardeau, Missouri, launched a new Diesel tow-boat to haul its barges on the Mississippi River.

The Maxwell Gravel Company, Dayton, Ohio, added new equipment including Osgood and Bay City shovels, a Haiss loader and an International tractor.

Cement *(from page 69)*

top decks goes on two 24-inch by 180-foot belt-conveyors followed by two 24-inch by 93-foot shuttle conveyors to any of five new reinforced-concrete storage silos. These are 36 feet in diameter and 60 feet high and have a total capacity of 15,000 tons. They were built by the Dinwiddie Construction Company. Their flat bottoms have center openings through which Jeffrey-Traylor vibrating feeders discharge the stone on a 30-inch by 215-foot belt-conveyor. This has a Stearns magnetic head pulley to remove tramp iron before the stone is discharged into the Number 7 Symons cone crusher in the secondary-crushing building.

The finer and lower-grade material falling through the bottom decks of the screens is carried on a 24-inch by 160-foot belt-conveyor. This feeds a 24-inch by 72-foot shuttle belt-conveyor which discharges this material into any of five 325-ton bins which formerly received the entire output of the two old driers. A reclaiming belt-conveyor under these bins formerly fed the Symons crusher but has been cut off to by-pass it.

A second rough blending of the two grades of raw materials is made in withdrawing them from their silos and bins, where they are combined on the main belt-conveyor in the secondary-crushing and screening department. The Symons crusher product is discharged direct on this conveyor and the low-grade material is discharged on it by a cross belt-conveyor. All these conveyors are of Stephens-Adamson manufacture and are driven by Westinghouse motors through Pacific speed-reducers or by gear-motors.

In 1941 an installation was made for adding iron scale to the raw material and this has not been changed. The scale is stored in a small building and is dumped from a concrete-type buggy into a bin under the floor. A belt-feeder discharges this material on a belt-conveyor which in turn discharges it on the above-mentioned main conveyor along with the other raw materials.

Other Plant Improvements The Cumberland Portland Cement Company completed a number of improvements to its plant at Cowan, Tennessee. New reinforced-concrete silos were built and considerable new equipment was installed.

Improvements were made to both the cement plants in Puerto Rico. These included the installation of Schaffer Poidometers.

One mid-western cement plant was asked to change to coal firing when it became necessary to redistribute natural gas. A Whiting direct-firing coal pulverizer was installed on short notice to fire the two kilns in this plant.

The Spokane Portland Cement Company opened a new quarry at Marble, near Colville, Washington and improved its crushing plant there. Facilities for the loading of bulk and sacked cement were provided at its plant at Irwin, near Spokane.

The San Antonio Portland Cement Company installed a 16-foot separator in the finish-grinding department of its plant near San Antonio, Texas.

The Consolidated Cement Corporation improved its plant at Cement City, Michigan by converting two 11- by 175- foot kilns into a single 400-foot kiln, which was equipped with a Smidth chain system and a Vanderwerp recuperator. The use of filters was discontinued and the waste-heat boilers were convided at its plant at Irwin.

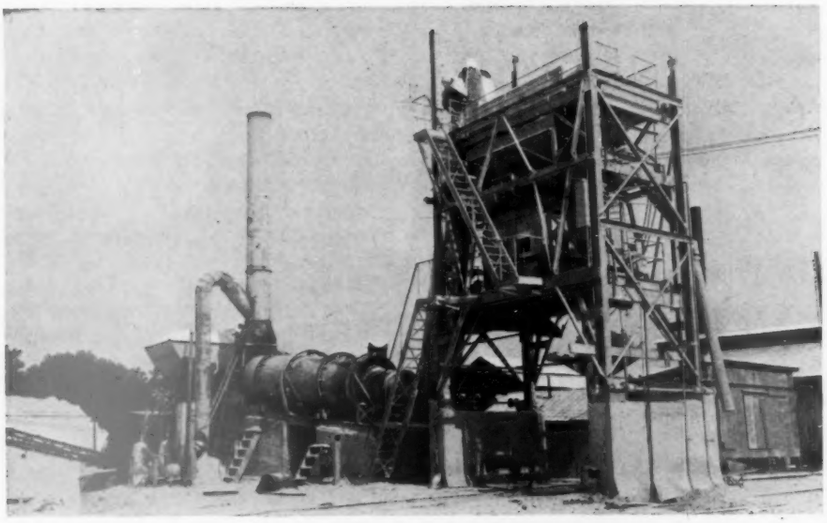
The Missouri Portland Cement Company built a new pack-house in which an individual Norblo automatic dust-arrester was provided for each packer. A new Norblo pneumatic bag-cleaner was also provided.

The Peerless Cement Corporation installed at its Detroit plant one of the largest Goodyear belt-conveyors ever made to carry rock and coal from its dock on the Detroit River to its raw-material storage. This belt is 54 inches wide and 1,240 feet long and weighs 24,300 pounds.

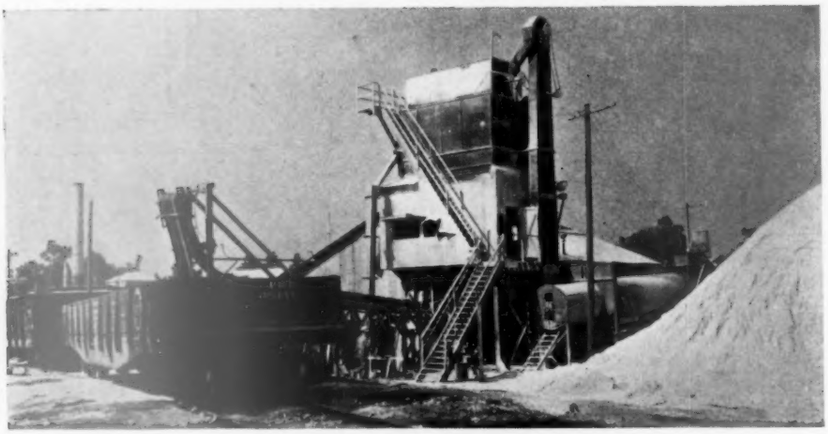
Knoizen to Speak at Gravel Convention

The new director of the Mining Division of the War Production Board, Arthur S. Knoizen, will address a meeting of the National Sand and Gravel Association in Cleveland at the Hotel Statler on Wednesday afternoon, January 27, during the association's annual convention.

Mr. Knoizen will be the first speaker at the afternoon session on January 27, which is scheduled to begin at 2 o'clock. A second speaker wil be M. B. Garber of WPB's Construction Machinery Division, who will discuss the procurement of new equipment under the L-192 Order.



The new 60-ton per hour plant with mixer building in foreground.

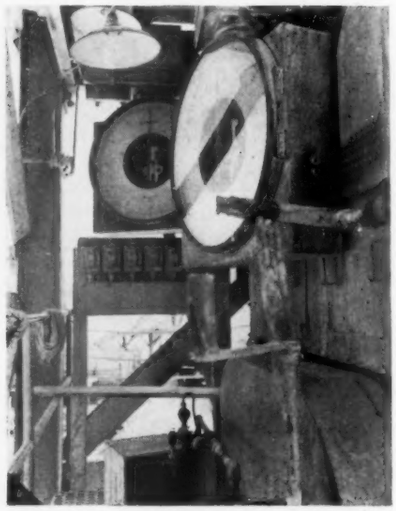


The 50-ton per hour plant. Car-loading conveyor at left.

Supplies Bituminized Stone to Vital War Projects in Florida

THE operations of the McDonald Corporation at Brooksville, Florida have received publicity more than once in these pages, the last time being July, 1937 when an article was published describing a new concrete-brick plant. This plant has since been enlarged by the addition of a second Dunbrik machine. A few years ago a 50-ton per hour aggregate-bituminizing plant was installed and in September, 1941 a second plant, which has a capacity of 60 tons per hour, was added. Both plants are now busy finishing a 200,000-cubic yard contract for airports which are playing a major part in the war effort.

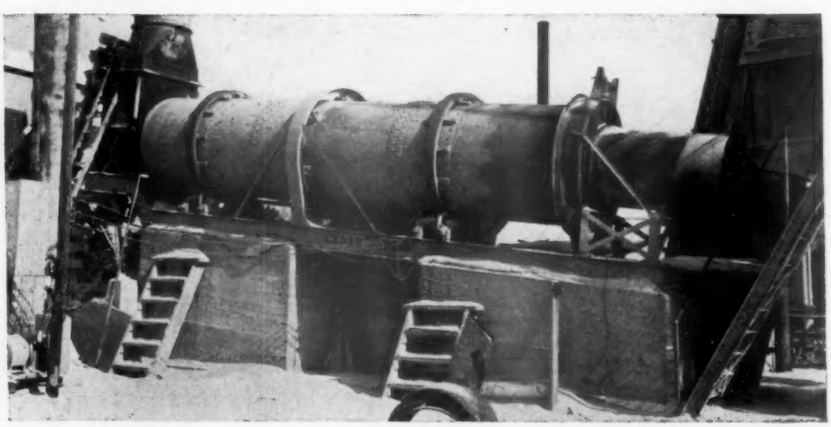
The cold-lay asphaltic concrete used for this work is the same as that furnished by the company to cities and counties for road-repair work. No effort has yet been made to secure large road-construction contracts. The aggregates used are ⅜-inch-minus Florida lime rock and rock sand produced at this quarry. Mixed with 7 per cent. of RC3 cut-back asphalt, this product remains pliable during shipment and can be stock-piled at least 6 weeks before it breaks down.



Scales on bitumen and aggregate batchers at new plant.

The aggregates are trucked to the bituminizing plants, where a crane unloads them either to the plants or to stock-piles. At the new Iowa plant a bucket-elevator feeds the aggregates from a hopper to the 4- by 22-foot oil-fired rotary drier. Draft is created by an American Blower fan driven through Manhattan V-belts. The dried material drops into a pit from which an elevator feeds it to an Iowa Symons screen over the 2-compartment plant bin. The drying temperature is regulated by a Foxboro temperature indicator. The bitumen and aggregates are measured into a 1½-ton mixer from which the finished product is discharged into gondola railroad cars.

The rebuilt Cummer plant has a



The 4- by 22-foot oil-fired rotary drier in the new plant.

22-foot drier and a 1-ton mixer from which the product is carried on a 60-foot belt-conveyor to cars for shipment. This conveyor has a hinged end so it can be raised to allow the switching of cars. Kron dial scales are used on the batchers of both plants. The bitumen for both plants is stored in a 60,000-gallon tank and a 150-horsepower boiler is used for heating it. The fuel oil for the boiler and the two driers is stored in a 12,000-gallon tank.

The crushed-stone plant was built in 1926 by the Consolidated Rock Products Company which on January 1, 1937 was consolidated with other properties of the McDonald Corporation. Few changes have been made in this 80-ton per hour plant since it was built, but, as soon as defense demands allow, the quarry end of the operation will be improved. Trucks in the quarry now discharge the rock into cars on an incline, the latter discharging it into the primary crusher. This winter the primary crusher may be moved into the quarry with a belt-conveyor to the plant. Three Easton 10-cubic yard truck-trailers are on hand and these will then be put in operation.

The Cement Limitation Order

By GABRIEL ASH

SEVERAL months ago it was known that the War Production Board was intending to issue certain regulations with respect to the manufacture of Portland cement. This action should have been expected as it was not only dictated by the expected increase in the consumption of Portland cement, but in an even greater degree by the general tendency of the WPB to simplify production.

Thus, as far back as in May, 1941, the National Bureau of Standards and the Office of Production Management devised a plan of coöperation on the subject of simplification in order "to minimize the number of sizes and varieties of goods of common consumption and of semi-proccessed materials from which these goods are manufactured".

According to Lyman J. Briggs, Director of the National Bureau of Standards, the aims of the Division of Simplified Practice are: (1) to conserve scarce materials, (2) to provide bases for price control, (3) to improve national efficiency through concentration on necessary grades and qualities; and (4) to provide specifications for emergency purchases, admitting suitable substitutes for scarce materials.

Inasmuch as the existing numerous specifications of the federal government, of the War and Navy Departments and other war agencies create the framework of governmental and industrial purchasing, the soundest policy was the organization of a Specification Branch for the revision of numerous specifications. Thus more than a year ago the Specification Branch was organized at the Bureau of Industrial Conservation, WPB. According to C. L. Warwick, Chief of the Specifications Branch, the major function of this organization is "to aid in the conservation of critical materials through revision of government and industrial specifications covering critical materials and products containing critical materials".

The General Limitation Order W-179, issued by WPB on August 3, 1942, is in accord with those principles.

It reduces the number of cement types from 5 to 3. These three are: the Standard, the Modified (moderate-heat) and the High-early-strength cements. It eliminates the 28-day tests for the first two types and the 7-day test for the third one. In addition, it prohibits the allocation of silos for the storage of Portland cement for the exclusive use of any specific purchaser.

These new regulations of the WPB, designed to increase the output of cement and to simplify its manufacture, should be readily accepted by the producers. Created by the present emergency, they are of actual benefit.

One of the characteristic facts in the manufacture of Portland cement in this country is the existence of numerous specifications advanced by various official and other purchasing organizations. Some of them limited the percentages of certain compounds, whose presence in cement has been assumed and which could be estimated only indirectly by special methods of calculation.

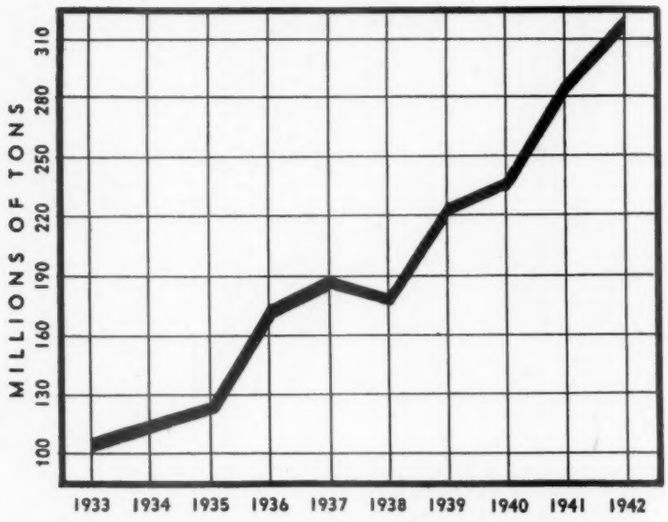
Some of them introduced particular methods for determining "good cements", methods, discarded many years ago, and which, when generally applied, did not give and could not give correlated and convincing results. As an example, the sometime-ago vividly discussed "sugar-solubility test" for determining the grade of calcination and prehydration of clinker, could be mentioned.

It would unnecessarily enlarge this article were the author to list the multitude of specifications for cements "suitable" for highways in connection with particular aggregates used in the construction of these highways, for foundations being placed on particular soils, etc. The uses of cement concrete are extensive and manifold. Consequently the cement users demanded certain properties. Some of these demands were justified and promoted considerable improvements in plant equipment, as well as in the process of manufacturing. Of course, it is absolutely within the rights of customers to specify general properties of cement, such as resistance, setting time, heat of hydration, soundness, shrinkage, etc. It is, however, the prerogative of the producer to determine the right way in which to make a product possessing the required properties.

Besides, the existence of "too many" specifications and the necessity of complying with them are handicapping the normal course of manufacture. The author is aware of a cement plant in the East which produced a dozen types of cement and which was forced to provide 13 different storage places for 13 various customers. Everyone will readily sympathize with the production manager of this plant. The WPB regulations prohibit such practices and will be gratefully appreciated by the operating manager of that plant and others in a similar position.

It has been heard that, besides the eliminations already issued, WPB, in order to economize the consumption of steel for grinding purposes, is considering limiting the fineness of Portland cement so that its specific surface shall not exceed 2,000 square centimeters per gram. Other limitations and simplifications of the manfacturing procedure may follow. Created by the emergency, they will obviously be temporary. But those already issued, especially those referring to the types of cement and to the system of storage, in the opinion of this writer, should remain in force even after the victorious end of the war.

Crushed Stone • 1942



THE crushed-stone industry in 1942 for the fourth successive year set a new high in production records. According to the U. S. Bureau of Mines, the output was about 9 per cent. over the 1941 volume of 181,160,980 tons. This increase is credited largely to the growth in the demand for limestone flux for blast furnaces, which poured a record flood of precious metal into the war effort. The unprecedented volume of railroad traffic also undoubtedly made necessary an increase in the production of railroad ballast and the all-out farm program brought with it a record demand for agricultural-limestone. The only major category in which production dropped below the 1941 level was concrete aggregates, as the huge war construction program failed to compensate entirely for the loss in private construction demand.

All indications point to a continued high rate of production at least into the middle of 1943. Then, unless new government projects not now in sight are started, there will be a gradual falling off in the demand. The plants producing only or mainly fluxing, ballast, chemical and metallurgical stone or agricultural limestone will not be affected. Those whose output is mostly concrete aggregates will join the plants not located near important construction projects which have already experienced more than a year of low demand. Some of these plants operated at depression levels during the year, while those more fortunately situated were forced to operate 24 hours a day and 7 days a week to meet the demand.

An outstanding feature of the year was the manner in which established commercial producers went after business instead of waiting for it to come to them. A large percentage of the aggregates used in the widely-scattered war projects built was crushed stone and much of this was produced by portable or temporary plants operated by established producers. Most of the new 1942 plants were of this type, although a number of permanent plants too were built to supply stone for important industries. Again the bulk of expenditures for equipment and supplies was devoted to the expansion and improvement of existing plants.

Pittsburgh Plate Glass The outstanding new crushed-stone development of the year, both from the standpoint of size and interest, is the limestone mine and plant of the Pittsburgh Plate Glass Company near Barberton, Ohio. The mine is being developed at the 2,252-foot level which is said to make it the deepest limestone mine in the world. The plant, which has an initial capacity of about 300 tons per hour, is now completed and will be in operation at full capacity in a few weeks when development of the mine has progressed sufficiently. The crushed stone produced will be used chiefly in the company's extensive chemical operations but some will also be sold commercially.

The radial screening and storage tower of the Pittsburgh Plate Glass Company plant.

The double-entry system of room-and-pillar mining will be used and the drilling and blasting methods will conform with standard practice. Stone will be loaded by three Marion electric shovels—one of 2½- and the others of 1½-cubic yard capacity. Koehring 8-ton capacity Dumptors will haul the stone to the pocket feeding the primary crushing and scalping system in the mine. This consists essentially of a Ross chain-feeder, a grizzly, a 48- by 60-inch Allis-Chalmers jaw crusher, an Allis-Chalmers Low Head screen, and conveyors. The minus-7-inch stone goes to a 500-ton storage bin from which the two 10-ton skips are loaded automatically. These are operated in balance by an Allis-Chalmers 1,250-horsepower hoist which has a conical drum designed for high-torque, slow-speed starting and high-speed travel.

At the steel head-frame the skips discharge the stone into a 100-ton storage pocket from which a Jeffrey-Traylor vibrating feeder discharges it on the belt-conveyor running to the loading building. A screen removes two coarse sizes which drop into bins under which cars are loaded for the chemical plant.

The stone falling through this screen goes on another conveyor to the top of the Kern radial-storage tower, where the sizing is done by

General view of Pittsburgh Plate Glass Company plant showing left to right: radial storage tower, truck-loading bins, car-loading bins and mine head shaft.

wo double-deck screens followed by another pair on which only one deck is now being used. The product of the latter is agstone. A fifth screen resizes the oversize from the first pair of screens. The 6-compartment radial-storage system has a storage capacity of about 150,000 tons. The Sauerman 1½-cubic yard scraper is used for distribution and reclamation is operated by a crawler crane.

Any desired size or blend of sizes is reclaimed from storage on a belt-conveyor running back to the loading building, where it can be discharged into commercial-stone bins from which railroad cars are loaded. This stone can also be fed either to a Symons 3-foot cone crusher or to an Allis-Chalmers Pulverator for reduction and returned to the radial-storage tower for re-screening. A screen over the loading bins can also be used for re-sizing the stone from the tower when re-crushing is not necessary. All this material can be discharged either direct into car-loading bins or on a belt-conveyor running to a set of six truck-loading bins.

Provisions are also made for the storage of either of the two coarse sizes of chemical-plant stone in a second radial-storage tower. Temporarily stone is being hauled to this tower by Dumptors, but a belt-conveyor will later be installed for this purpose. A belt-conveyor feeds this stone from storage back to the car-loading bins or to a screen which removes any fines before it goes to the bins.

In designing this plant every effort was made to obtain high efficiency and close control. Wherever possible automatic control is used. Accurate control and records are also provided by the use of Fairbanks scales at various points in the operations. In the mine every load of stone is automatically weighed before it is dumped. Separate track scale are used to weigh the commercial stone and that for the chemical plants. Truck shipments are weighed on a scale at the plant office. An automatic control board shows at all times what equipment is in operation.

National Lime & Stone The National Lime & Stone Company has for many years conducted extensive plant operations at Carey, Ohio, for the production of lime, steel-mill fluxing stone, pulverized limestone, etc. In the last few years the quarrying operations ran into a ledge of stone not suitable for these products and this stone had been wasted. During the year a new plant was built for the manufacture of ballast and commercial crushed stone from this material. This plant has a capacity of about 200 tons per hour when ballast is the chief product.

The stone is discharged from trucks to the Allis-Chalmers Number 10 Gates gyratory primary crusher which reduces it to minus-4-inch size. A bucket-elevator feeds it to a 4- by 8-foot Niagara 2-deck screen from which the material over the top of both decks can be chuted to the Number 7½ secondary crusher depending on whether or not ballast is being made.

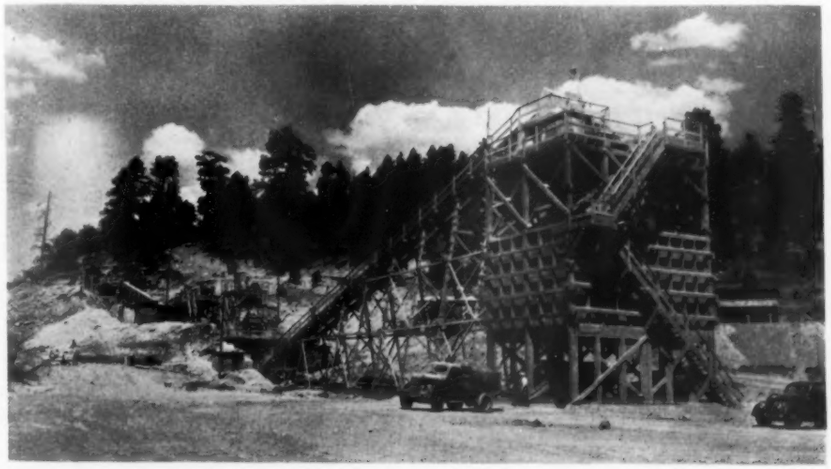
The product of this crusher is elevated to a 4- by 14-foot Tyler Ty-Rock screen which discharges three sizes direct to bins. The undersize from this screen is split to a 4- by 12-foot Tyler Niagara 3-deck screen and a pair of 3- by 8-foot Niagara 3-deck screens. The products off the decks of these screens go into bins.

The minus-¼-inch undersize from the last three screens can go to stor-

The new plant of the National Lime & Stone Company at Carey, Ohio.

age or to a washing system which makes stone sand. A small Robins Gyrex screen can scalp the coarser material into a New Holland roll-crusher and the throughs from both go through a balanced sand-tank and a sand-drag, from which the sand is discharged to a storage pile.

The coarser products are stored in



Plant of Joint Ventures, Inc. near Flagstaff, Arizona, showing primary, secondary, and tertiary-crushing departments and screening-and-storage building.

two rows of 8 bin compartments each for loading into cars. Chutes in the sides of the compartments in one row can be used for loading trucks. Stone can also be fed from some of these bins on a series of belt-conveyors feeding a Symons 4-foot short-head cone crusher. This product is discharged to the first bucket-elevator.

Under one row of bins is an arrangement for washing stone as it is loaded into cars. This consists of a 4- by 9-foot Robins Gyrex screen

Two screens which do all the sizing at the Joint Ventures plant.

mounted on a motor-driven carriage which can be moved on rails to the proper position under any compartment.

Joint Ventures The plant of Joint Ventures, Inc., near Flagstaff, Arizona, which is supplying crushed stone for the construction of a large ammunition-storage base, is an outstanding example of the manner in which producers are coöperating with each other in order to further the war effort as much as possible. When not one of the three largest aggregates producers in southern California could assemble enough equipment for the production of the 200,000 cubic yards of stone and sand required for this project because most of their equipment was busy on similar jobs elsewhere, they pooled their resources and took the contract. The mixing and delivery of the concrete was included.

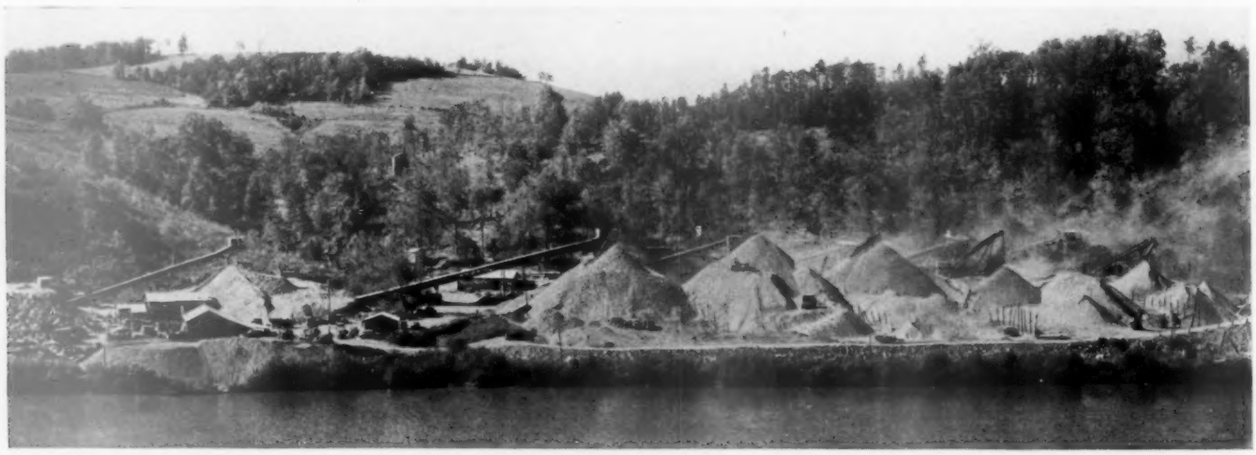
Conveyor system which carries aggregates from Birmingham Slag Company's plant to the concrete mixing plant at the TVA Douglas Dam.

Good rock deposits are scarce in this scenic section but the deposit selected is a basaltic lava, known locally as blue malpais, which met the specifications. The deposit is badly seamed and broken but the clay in these seams and the light overburden are not a problem as all the material under ¼ inch in size is wasted at the plant. Roots and any other foreign matter are picked off the first plant conveyor by hand.

Wagon-drill holes are sunk for the full height of the 30-foot face and, because of the nature of the rock, these are loaded with bag powder. The air for these drills is supplied by a Gardner-Denver compressor mounted on a Caterpillar tractor. Secondary drilling is done with jackhammers.

The stone is loaded into trucks by two Northwest shovels, one of which is powered by a Murphy Diesel engine. The trucks haul the stone downgrade to the plant, an average distance of about 500 yards. A Caterpillar RD8 tractor equipped with a Le Tourneau bull-dozer keeps the quarry floor and roadway in condition for truck operation.

The rock is discharged from the trucks over a 6-inch rail grizzly with the oversize going through a 28- by 44-inch jaw crusher and the undersize dropping direct on a 36-inch by 40-foot belt-conveyor. The rock is then split to a pair of Allis-Chalmers Number 10 gyratory crushers for secondary reduction. The product of these machines is carried on a 36-inch by 25-foot belt-conveyor to a pair of Symons cone crushers for final reduction. A 36-inch by 180-foot belt-conveyor carries the material to a pair of 40-inch by 16-foot Symons 3-deck screens. The oversize rock drops into a bin from which it is loaded into trucks and returned to the primary crusher. The minus-¼-inch material goes into another bin from which it is hauled to waste piles. The concrete rock also drops into bins and is hauled by the trucks a distance of about 6 miles to the project.



The Birmingham Slag Company plant which is supplying the aggregates for Douglas Dam. At left is conveyor from primary crusher to raw storage pile. The other piles are sized aggregates over a reclaiming tunnel.

Birmingham Slag —Douglas Dam The Birmingham Slag Company is furnishing approximately 1,000,000 tons of processed aggregate for the construction of the TVA's Douglas Dam, located on the French Broad River about 30 miles from Knoxville. This contractor also furnished the aggregates for Cherokee Dam which was started in June, 1940, and some of the equipment used on that project was transferred to Douglas Dam.

The quarry site is located approximately one-half mile downstream from the dam. The rock is classified as a dolomite. Aggregates are being supplied to the TVA in four sizes of rock, varying from fine to cobble, and one size of graded sand. The finished rock is supplied over a reclaiming tunnel which was installed by the TVA. The contractor utilizes the hillside for the location of the crushers and screens and piles the material over the reclaiming tunnel by means of stackers. A raw-storage pile is provided on this job to keep quarry operations independent of screening operations.

The primary crushing is done in an Allis-Chalmers 42-inch gyratory crusher, the secondary by means of a 5½-foot cone crusher, a 4¼-foot cone crusher, a 4-foot short-head cone crusher, and an Allis-Chalmers Pulverator. The various screening units are installed at the screening structure along the hillside. The crushing units make most of the sand, although some is made in a 6- by 12-foot rod-mill. An Eagle washer is also part of the sand plant. The plant can produce aggregates for approximately 150,000 cubic yards of concrete a month.

Some of the fixed stackers at TVA Fontana Dam plant which will discharge sized aggregates over reclaiming tunnel in draw at right. Screens are on timber structures at left.

TVA—Fontana Project The TVA's Fontana project, located on the Little Tennessee River in North Carolina, will contain approximately 3,000,000 cubic yards of concrete. The TVA will process its own coarse and fine concrete aggregates for this structure. The quarry site, which is approximately one-half mile below the dam site, is rapidly being developed. The rock is a quartzite containing about 80 per cent. free silica. The drilling will be done by blast-hole drills supplemented by wagon drills and three-cubic-yard electric shovels will be used for excavating. Four sizes of rock, the maximum 6 inches, and one size of sand will be processed.

Suspension bridge across river which will discharge stone from primary crusher into raw storage piles over reclaiming tunnel at TVA Fontana Dam plant. Main plant is in background.

The primary-crusher arrangement will consist of two Allis-Chalmers 42-inch gyratory crushers with an initial opening of approximately 4½ inches. A primary storage pile has been adopted to keep the quarry operations independent of the remainder of the plant.

The secondary crushing will be accomplished by two 4¼-foot Symons standard cone crushers set at approximately 1½ inches and two Symons 4-foot short-head cone crushers set at approximately ¾-inch. The short-head cone crushers will make a large amount of the material needed for feeding two Allis-Chalmers 9- by 12-foot rod-mills which will produce the sand.

A Dorr hydroseparator and rake-type classifier will be used for the removal of fines from the sand product. The individual sizes of aggregate will be stored over a timber reclaiming tunnel. No overhead screening structure will be employed

The portable crushing-and-screening plant of the Hills Materials Company near Rapid City, South Dakota which supplied material for a bomber base.

as advantage has been taken of the hillside and fixed and radial stackers will carry the aggregates over the tunnel which is located in a draw. One object of this arrangement was to conserve steel. The aggregates will be passed over rinsing screens before reaching the mixing plant.

Approximately two miles of conveyor line is required in this lay-out, including that for concrete handling. The belts vary in width from 24 to 42 inches. The capacity of the plant will be approximately 800 tons per hour. Because of the large amount of free silica in the rock, special precautions will be taken for the prevention of silicosis by a dust-control system furnished by the American Air Filter Company.

Cumberland Quarries Cumberland Quarries, Inc., has nearly completed its crushed-stone plant near Albany, Kentucky, which will supply, 2,000,000 tons of aggregates for the Wolf Creek Dam and Reservoir project.

Shovel Loading electric truck in Central Rock Company mine.

The quarry is located 12 miles from the plant which is near the dam site. The stone will be reduced to minus-6-inch size at the quarry by a 48- by 60-inch jaw primary crusher and a 20-inch gyratory secondary crusher. This material will be stock-piled and hauled to the plant as needed. Diesel engines will generate the power needed at the quarry.

Screening and storage towers of the Palmetto Quarries Company plant near Columbia, South Carolina.

The screening plant is equipped with Allis-Chalmers Ripl-Flo and Style "B" screens. The finished stone and sand will be stored over a reclaiming tunnel and a conveyor will carry these materials as needed to the contractor's batching plant.

Hills Materials Typical of the many portable crushed-stone plants which are supplying a large part of the material for the construction of important war projects is the one operated near Rapid City, South Dakota by the Hills Materials Company. This company had a contract to supply 62,000 tons of stone for a bomber base near that city.

The quarry was in a deposit of hard lime rock from which the material was trucked to the plant. There it was discharged into the 18- by 38-inch Austin-Western primary jaw crusher. A conveyor fed the crushed stone to a 3- by 10-foot Symons 2-deck screen from which the minus-8-mesh fines were wasted. The oversize went to a 10- by 36-inch Pioneer jaw crusher and its product, with the material off the bottom deck of the screen, were conveyed to another Symons 2-deck screen. The plus-¾-inch oversize from this screen went to a 26-inch Austin-Western roll-crusher from which it was returned to the screen. The 4-mesh to ¾-inch stone off the bottom deck went to a truck-loading conveyor. The minus-4-mesh throughs were conveyed to another Symons 2-deck screen which made 4- to 8-mesh chips and minus-8-mesh dust.

Palmetto Quarries The outstanding commercial crushed-stone plant of recent years is that of the Palmetto Quarries Company at Columbia, South Carolina. It is built entirely of reinforced concrete and steel and is the ultimate in modern crushed-stone plant design. Provisions are made for the production of any sizes of stone desired. Designed for a capacity of 175 tons per hour, this plant is now producing an average of 230 tons per hour and this output can be doubled by the installation of a few additional crushers and screens and by replacing the present conveyor belts with wider and heavier ones.

Everist Of the established aggregates producers who have engaged in the production of materials for scattered war projects probably none was more active than the

The L. G. Everist portable crushing-and-screening plant which produced large quantities of materials for war projects in Arkansas and Kentucky.

Head shaft of Central Rock Company mine ventilating fan at left.

firm of L. G. Everist, Inc., of Sioux Falls, South Dakota. Typical of this company's operations was the production of 300,000 tons of sized sandstone for concrete and road construction at Camp Chaffee near Fort Smith, Arkansas. This order was filled in about six months with a Cedarapids Master Tandem portable crushing-and-screening plant. After this order was filled the plant was shipped to Richmond, Kentucky, where 280,000 tons of rock was produced for an ammunition dump.

The deposit at the Arkansas job consisted of a ledge of fine-grained sandstone covered with 3 to 4 feet of overburden. A 15-foot face was worked. Generally speaking, the top 5 feet of stone was very flat and seamy and the bottom of the ledge was thick and dense and was inclined to come out in blocks which required considerable secondary shooting. The quarry equipment consisted of a Number 602 Lima shovel, four International trucks, three Ingersoll-Rand wagon drills, two Gardner Denver S55 hand drills

Hoist which operates balanced-type skip in Central Rock mine.

and compressors. Timken side-hole detachable bits were used.

The plant equipment consisted of a 25- by 40-inch primary jaw crusher with an apron-feeder, a 10- by 36-inch jaw crusher, 40- by 20-inch rolls, 4- by 12-foot Cedarapids two-deck horizontal vibrating screens, belt-conveyors and truck-loading bins. The primary plant was powered by a Caterpillar D13000 engine and the secondary plant by a D17000 engine. An Allis-Chalmers 20-horsepower gasoline engine drove the final screen and some of the conveyors.

Concrete Materials The Concrete Materials & Construction Company of Cedar Rapids, Iowa, continued to play an important part in supplying the

One of two truck-trailers at primary crusher of Stewart plant.

aggregates for war-construction projects in different sections of the country. Early in 1942 two portable crushing-and-screening plants were moved into the Camp Campbell, Kentucky, area. These were in operation on March 20 and have already produced 750,000 tons of stone on a contract which, when completed about April 1, 1943, will probably amount to over 1,000,000 tons.

The stone in the quarry is very hard but fractures easily. All the primary drilling has been done with wagon drills, for which air is supplied by an Ingersoll-Rand compressor. A 1½-cubic yard Northwest Diesel shovel loads the stone into Koehring Dumptors for haulage to the plants. A ¾-cubic yard Link-Belt shovel is used for stripping, stock-piling, etc.

One plant consists of a 25- by 40-inch Cedar Rapids primary crusher with a feeder, a scalping screen over a 10- by 36-inch crusher, and a secondary scalping screen over a 24- by 40-inch heavy-duty roll-crusher. The final sizing of the material is done by screens on top of portable bins. This plant is powered entirely by electricity for which the company built its own 3,000-foot "high-line" and installed its own transformers.

The second plant consists of an 18- by 36-inch jaw crusher with a feeder, a 9- by 36-inch jaw reduction crusher, and a set of crushing rolls over the bins. The operation is similar to that of the other plant except that the capacity is smaller. This is also a Cedar Rapids plant.

At times as much as 125,000 tons of stone has been in stock-piles in anticipation of later demands. Roads have been built on the property and two scales have been busy almost continually weighing out the stone, which is all delivered by trucks.

The company also has several other operations in this area. Two plants comparable to those described above are now operating on the area of the Holston Ordnance Works near Kingsport, Tennessee. These have produced over 300,000 tons of stone to date. Over 300,000 tons of crushed stone was furnished for an air base at Smyrna, Tennessee, and the production of 200,000 tons of stone for an air base at Courtland, Alabama, has just been completed. The Smyrna plant was a single portable unit with a 25- by 40-inch crusher and was Diesel-powered throughout.

In order to facilitate the paper work in connection with these projects the company established an office on the area at Camp Campbell and moved part of its office force down from Cedar Rapids.

Other New Plants The Louisville Crushed Stone Company built a new plant at Huntsville, Alabama, to produce the aggregates for a new ordnance plant.

G. G. Hill & Company of Dexter, Missouri, installed a new plant for the production of 130,000 tons of crushed stone for runways for the new Vichy airport. The equipment included a 2540 Cedar Rapids crusher, a 1036 secondary crusher, a Number 3 Kubit crusher, and vibrating screens.

The Elkhorn Limestone Company built a new plant at Georgetown, Kentucky, which has been kept busy meeting the demand. The equipment includes a Champion primary jaw crusher and a roll-crusher, both driven by an 85-horsepower Waukesha gasoline engine. A ¾-cubic yard P&H shovel and a Sullivan compressor are used in the quarry.

The C. Dudley De Velbiss Construction Company built a temporary crushing plant near Albany Hill, California, to supply 30,000 tons of ballast for a strategic railroad between Emeryville and Richmond.

New 1¾-cubic yard shovel in Carbon Limestone Company quarry.

Central Rock The Central Rock Company, Lexington, Kentucky, early in 1942 began capacity production of rock from its new limestone mine, on which work was begun two years earlier. The decision to abandon the quarry was made for a number of reasons. The overburden was becoming too heavy for economical removal, limitations were being placed on blasting due to the location of the quarry in a built-up area, and a better grade of limestone could be obtained by mining. After exhaustive preliminary studies were made the sinking of the shaft was begun, most of the development work being done by the company's employees during slack periods.

The 7- by 22-foot shaft extends to a depth of 265 feet and is lined with concrete to keep out the water encountered at several levels. The mine is being developed by the room-and-pillar method and 40-foot rooms and pillars with a 40-foot ceiling will be used. Drilling is being done in the usual manner with Cleveland wagon drills making the drift holes and Sullivan safety stopers being used for the ceiling holes. Very little secondary drilling is necessary and the ultimate yield is expected to be about 3 tons of stone per pound of explosive. Timken detachable bits are used on all of the drills.

The stone is being loaded by a Bucyrus-Erie electric shovel with a ¾-cubic yard bucket. This machine is temporarily equipped with a 14-foot boom and a 9½-foot dipper stick until the mine is developed to its full 40-foot height. It loads the stone into a Walker electric truck which was rebuilt to meet the company's requirements. This hauls 4-ton loads of stone to the two 4-ton balanced-type skips which take the stone to the surface. The skip is operated by a Vulcan hoist located in a concrete-block building. The steel head-frame of the shaft is located near the plant and the stone is dumped automatically from the skips into the primary crusher. It was only necessary to install a chute above the crusher and no other plant changes were made. The plant capacity remains about 80 tons per hour.

Fresh air is circulated through the mine by a 5,000-c.f.m. Jeffrey Aerodyne, Jr. fan temporarily located at the top of the shaft. Later this fan will be moved down into the mine. Every safety precaution is observed and all the safety devices recommended by the Kentucky Department of Mines, and a few others, have been installed.

Southwest Stone The Southwest Stone Company in 1942 installed a Number 30-40 American ring-crusher in its plant at Chico, Texas. This is used as a secondary crusher and is used to produce ½-inch crushed limestone at the rate of 50 tons per hour. It duplicates an installation made at this plant a few years ago.

This company also installed in one of its plants two new Allis-Chalmers Type R crushers, one a Number 636 and the other a Number 848. Under severe operating conditions these two crushers are breaking down plus 3½-inch stone with 1-inch close side settings. This plant is operating 20 hours daily and seven days a week and is producing 60 carloads of aggregates daily. The output of this plant is expected to be increased about 50 per cent. soon by the installation of a new 30-inch Superior McCully crusher and additional Allis-Chalmers screens in the primar-crushing department.

The Columbia Quarry Company, St. Louis, Missouri, also purchased a 30-40 American ring-crusher for one of its plants for the production of agricultural limestone.

Pittsburgh Limestone The Pittsburgh Limestone Company installed a 4- by 10-foot Hardinge rod-mill in one of its plants for wet-grinding limestone tailings to increase the intermediate sizes produced.

This company also has nearly completed a new plant for the production of limestone flux for steel mills. Stone trucked from the quarry will be discharged into an Allis-Chalmers 21K crusher set at 6 inches on the open side. This material will then go to an Allis-Chalmers triple-deck Style C vibrating screen. The material passing through the top deck is recrushed, combined with the products from the other decks and fed to another Style C screen.

A 5- by 12-foot triple-deck Low Head washing and dewatering screen takes the undersize from the bottom deck of the second screen and the material from its two upper decks is again combined with the materials from the second screen. Three sizes of finished stone are made by a third 5- by 14-foot Style C screen. The undersize from the bottom deck of this screen is fed to another 3-deck Low Head washing-and-dewatering screen which produces finished stone.

Other Plant Improvements The Carbon Limestone Company purchased a 1¾-cubic yard Thew Lorain-80 shovel for its plant at Hillsville, Pennsylvania. A 2-cubic yard Lorain-82 shovel was purchased by the Liberty Limestone Corporation of Rocky Point, Virginia.

The Stewart Sand & Material Company for many years operated a mine and crushing plant at Pixley, Missouri. In 1930 truck haulage replaced locomotives and cars and in 1942 the trucks were supplemented by two Easton TR-10H side dump trailers hauled by Mack EG tractors. This installation was made to enable this 180-ton per hour plant to keep up with the demand for war construction in this area, which has made it necessary to operate two 10-hour shifts daily.

The Lockport Stone Company improved its plant at Lewiston, New York, by the installation of two new Seco screens, one with two decks and the other with 3½ decks. A new crusher, new bins, and new conveyors were also installed.

The Ellison Road Construction Company of Carthage, Illinois, purchased an established quarry and crushed-stone business near Garnett, Kansas, to supply material for an army air field. Three new power shovels, several trucks, and a portable crushing plant were added.

The Piedmont Quarries Company, Winston-Salem, North Carolina, purchased a quarry and plant near High Point. The plant was rebuilt and new equipment was installed, including a Symons cone crusher and a Simplicity double-deck vibrating screen.

McDonough Brothers, Inc., San Antonio, Texas, added a new secondary crushing and rescreening department to their plant near that city. The new equipment installed included a Pioneer screen and a 12-inch roll-crusher.

In order to produce nearly 600,000 tons of crushed stone for an ordnance depot from its plants at Chambersburg and Shippensburg, Pennsylvania, the Chambersburg Stone Company enlarged its plant at the former location. Together these plants can now produce 4,000 tons daily. The new equipment installed included a 25- by 40-inch Cedar Rapids jaw crusher, a 3-foot Telsmith Gyrosphere reduction crusher and two vibrating screens.

TWELVE TIPS TO TAX THRIFT

BECAUSE the Revenue Act of 1942 enacts the heaviest tax toll in history, producers and manufacturers of cement, lime, gravel and other nonmetallic minerals should utilize every means to effect tax economy. From my experience as a public accountant in this field, I offer these twelve tips to tax thrift, which should be helpful in keeping your tax expense at the minimum.

1. Do not overlap your returns. Taxpayers often omit certain expenses and liabilities that should be entered for the year covered by the return and then try to deduct them the next year. This is not permitted. Make deductions in the year in which the liabilities occur or you pay more tax. Losses incurred in any business transaction are ordinarily deductible, provided they are closed transactions during the taxable year with full consideration for salvage and other compensation received.

2. If your returns are filed on a cash basis, try to pay all current bills during the taxable year so that the expenses may be deducted from the income of that year.

3. If your returns are filed on an accrual basis, all the accrued items, which are expenses due but not yet paid, should be prorated to the end of the year and deducted. Many taxpayers omit accrued items, and ordinarily, these expenses are not deductible the next year, so they pay more tax.

4. Do not capitalize an outlay that logical argument will support as an expense. One taxpayer in the pit and quarry field charged a $650 repair bill to the property because he considered it an improvement. This increases the tax. Repairs that keep a property in ordinary efficient operating condition are an expense, not a capital increase.

5. Deduct sufficient depreciation each year. Taxpayers often lose considerable money through overpayments on their tax because they do not plan their depreciation schedules properly. A taxpayer is not permitted to take advantage in later years of his prior failure to take any depreciation or of his action in taking an inadequate allowance under the known facts of prior years.

More than one taxpayer in this field has lost money on his tax through a misconception of the depreciation regulations in the Internal Revenue Code.

One cement manufacturer bought machinery in 1934 for $10,000, estimating its useful life at 10 years. Appraising the machinery in 1938, he decided that the depreciation should be $6,666.67. In other words, the machinery had depreciated two-thirds of its original cost and was worth one-third of its original cost, or $3,333.33. The reserve on the books was amended accordingly and the taxpayer then found that he could claim subsequent depreciation for the adjusted value only—$3,333.33 in the remaining 5 years of estimated life, thereby losing a deduction of $1,666.67.

This shows how important it is to give careful consideration to depreciation from the start so that you fix the life span and allowance per year as accurately as possible. Figure the depreciation from the date of purchase and set up a schedule of annual deductions from gross income only after careful study.

Do not depreciate land. Deduct the cost of the land from the value of the real estate if land and building are combined on the books.

Some taxpayers assume that because machinery is idle for a year or so, it should not carry depreciation. Court decisions indicate that depreciation should be taken whether the equipment or buildings are used or not. If depreciation is not deducted for a unit not used, the annual rate must be applied toward the reduction of the remaining value in the asset, thereby decreasing the credit for the loss upon abandonment. If the taxpayer fails to take the yearly allowance, he can not take it in a later year and can not make up the difference upon abandonment.

6. You may now deduct non-business expenses paid or incurred during the taxable year for the production or collection of income, or for the management, conservation or maintenance of property held for the production of income. Up to now the courts have decided that, although income from non-business activities was taxable, the expenses incurred thereby were not a permissible deduction. The 1942 revenue bill has adjusted this inequality. Depreciation on income-producing property, whether used in business or not, is deductible; in fact, any charge incurred in connection with the earning of taxable income may be deducted from now on. Non-business debts must be totally worthless before deduction and then are subject to capital-loss limitations. However, do not confuse this amendment with losses suffered in transactions not entered into for profit. For example, if you bought a pleasure car and sold it at a loss, that is not deductible, or if you lose money on the sale of a residence used for your home at the time of the sale. But, if you make a profit on such a sale, your gain is taxable. The property must have been used for income-producing purposes before and at the time of the sale to get a deduction for loss and that deduction is subject to capital gains and loss limitations.

Medical expenses exceeding 5 per cent. of net income are deductible up to $2,500. Note that the sum you can deduct is only the *excess* over 5 per cent. of your net income.

7. Deduct for bad debts. Many taxpayers carry bad debts on their books too long, when they could reduce tax payments by writing them off. Moreover, they stand a chance of being turned down on such deductions because the law says that the debts must be reported in the year in which they are ascertained to be worthless. Heretofore, if you deducted bad debts in a loss-year, not getting a tax benefit thereby, you had to pay a tax on any recoveries in a subsequent year. For this reason taxpayers were advised not to deduct bad debts in a loss-year, but that no longer is necessary because the 1942 tax bill corrects this inequality by permitting the exclusion from gross income of subsequent recoveries on bad debts written off in loss-years provided that these deductions did not, in themselves, create a tax benefit in the form of a net operating loss carry-over. This amendment does not apply to taxpayers using the reserve method of handling bad debts because, in this case, the amount of the recoveries is not taken into income as such but merely credited to the reserve account, decreasing the amount of the addition to the reserve, at the same time reducing the charge to net profit and automatically increasing the tax so that the result is the same as if the recovery had been added to net income. But remember, you still must pay a tax on bad-debt recoveries if you got a tax benefit in the year of deduction.

By E. J. ROBERTS

8. For the first time, under the amendment in the Revenue Act of 1942, you are permitted a carry-back of operating losses for two years. This provision, combined with the 2-year carry-over written into the 1939 revenue bill, affords relief for the duration and during the postwar period to those taxpayers who experience losses in one year and profits in the next. You may carry over losses for two years. For example, losses sustained in 1941 may be carried over as a deduction from 1942 income, and if the loss is greater than 1942 income, the excess may be carried over to 1943. If, by then, the loss has not been absorbed, you can not get further relief unless you take advantage of the 2-year carry-back provision, which permits you to carry back an operating loss for 2 years but not prior to 1941. Severe restrictions of consumer supplies in 1943, the compression of net profit by price control, inflation, the abnormal demand for civilian goods as soon as war controls are abolished in the postwar period, the demand for our services and production abroad—these and other factors will inject instability into business for some time to come, hence, profit and loss are likely to peak and dip erratically. Under the carry-over carry-back provisions you are better able to survive any such instability from a tax standpoint.

9. Do not wait until the day before filing time to prepare a return. In the haste essentials to tax economy are overlooked. Out of 103 cases examined during the past year, 60 or 65 per cent. prepared their returns within a few days of filing time and in almost every case we believe that economies could have been effected if more consideration had been given the problems touching tax preparation, but the time was too short.

10. In most transactions there is only one right way to view the tax procedure, but in certain border-line cases, recording depends upon the interpretation of conditions and this will vary in different establishments. The item may be considered as expense or a capital increase, a business asset or a capital asset, etc. When a transaction may be interpreted in two different ways with equal propriety, use the interpretation in your favor. This is not tax evasion; it is tax avoidance. There is a big difference. The U. S. Supreme Court has held that a taxpayer may use any legal means available to keep his tax down to the minimum, as long as he sticks to the law and does not conceal anything.

When income-tax rates were low, it caused less financial havoc to pass up some deductions. To-day every dollar deducted means a much bigger saving, so take all you can get legitimately. There are lawful means of reducing tax and there is no stigma attached to any taxpayer who follows the tax laws, yet tries to keep his tax expense down to the minimum.

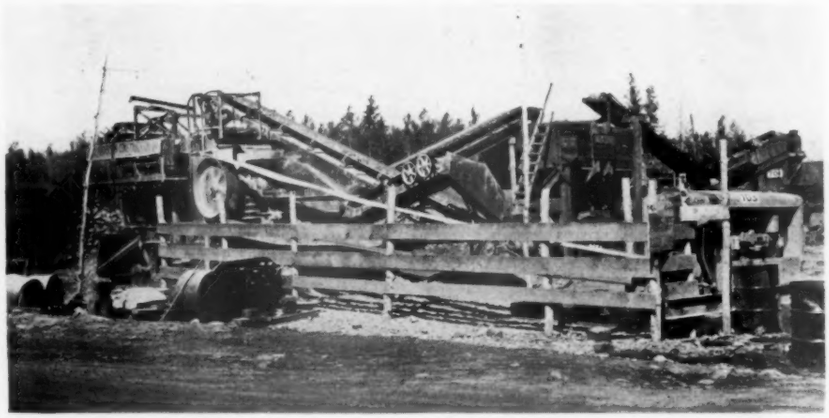
11. Accounts of no account stymie tax economy. Keep accurate records on production, costs and all data incidental to the filing of the tax return so that the necessary check-ups can be made at any time. Many tax losses result from inaccurate or inadequate recordings of production data. Set up a reserve for taxes at the beginning of each year, thereby charging each month for its pro rata share of the annual tax expense, otherwise the months in which taxes are paid will be charged too heavily with this expense. A reserve spreads the tax expense evenly over the 12 months. Moreover, this method gives you a better idea of your spendable income, month-to-month, after the tax has been deducted. Plan for tax economy from now on. Tax is now a major expense. You must give as much thought to it as you do to your other business problems throughout the year. The taxpayer can no longer afford to wait until filing time to consider his tax problems any more than he can forget other expenses until the end of the year and then settle up in a lump sum without further ado. Keep abreast of the tax laws. Maintain a tax file for copies of returns for all taxes—Federal and state income, sales tax, social-security tax, etc. File amendments and changes to existing statutes and other data. Courts frequently render decisions which may change the methods of computing the tax in your favor, likewise with amendments to existing laws. If you overpay through ignorance of such changes, you may be out of luck because the Treasury Department may not enlighten you. File clippings from newspapers and other sources anent income-tax matters and refer to these data when preparing the return. If in doubt about any phase of income-tax preparation, consult your banker, the nearest income-tax office or a tax accountant.

12. It is recognized, but not determinable, that at one point taxes become a brake on enterprise because management is dulled, extravagance and inefficiency encouraged. Although that point is not readily discernible, the taxpayer has one means of keeping that border-line as far away as possible. His taxable base should represent his true net income. High rates are justified to win the war but not the taxing of artificial income. The taxpayer must see that his income, as reported, takes advantage of all legitimate deductions.

Gravel Producer Must Pay Road for Damages

Federal Judge James A. Donohoe ruled at Omaha, on December 24 that the Lyman-Richey Sand & Gravel Company of that city will have to pay $6,000 to the Chicago & Northwestern Railroad for damages resulting from a collision between one of the company's gravel trucks and a train.

The accident took place at a railroad crossing in Omaha on June 23, 1941, when a locomotive and a fully loaded 10-ton truck came together. The railroad testified that crossing warning signals were in full operation at the time of the collision.



This Pioneer duplex portable screening-and-crushing plant was used on the Alaskan Highway project by one of the contractors, the Anderson Construction Company. Power was furnished by a Caterpillar Diesel engine.

Phosphate, Barites and Other Minerals Felt Stimulus of War Demand in 1942

MOST of the other nonmetallic minerals industries in 1942 shared with the cement, sand-and-gravel, and crushed-stone industries the general prosperity resulting from the unparalleled demands of our war program. According to the U. S. Bureau of Mines, all-time high records were set by the sales of barites, phosphate rock, industrial clays, fluorspar, potash and sulphur among others. The same is also undoubtedly true of the sales of mica, graphite, bauxite, magnesite, feldspar, talc and other minerals, mostly strategic, on which figures are not yet available. Increases over the previous year were also shown by the industrial sand and salt producers. A few industries, especially those depending mainly on private building construction for their sales, lost ground during the year. Lime sales were about 11 per cent. and gypsum sales about 6 per cent. under the 1941 figures.

The 1943 prospects for these industries in general are bright and most of them can count on demands no smaller than those of 1942. The outstanding exceptions again are the lime and gypsum industries which, along with cement, stone and gravel, are faced with a diminishing volume of war construction. Any relaxation of the present restrictions on private building would, of course, brighten their prospects considerably.

Phosphate Final figures on the 1942 production of phosphate are not yet available, but the U. S. Bureau of Mines estimates an increase in sales of about 6 per cent. over the 1941 volume of 4,688,312 long tons. In the first half of 1942 the amount sold or used was 2,227,313 long tons which was 129,519 tons over the 1941 total for the same period. The increased use of fertilizers was largely responsible for this condition and the expanded agricultural program for 1943 should result in an even greater use. The growing demand for phosphorus production from plants in the Tennessee field was also an important factor.

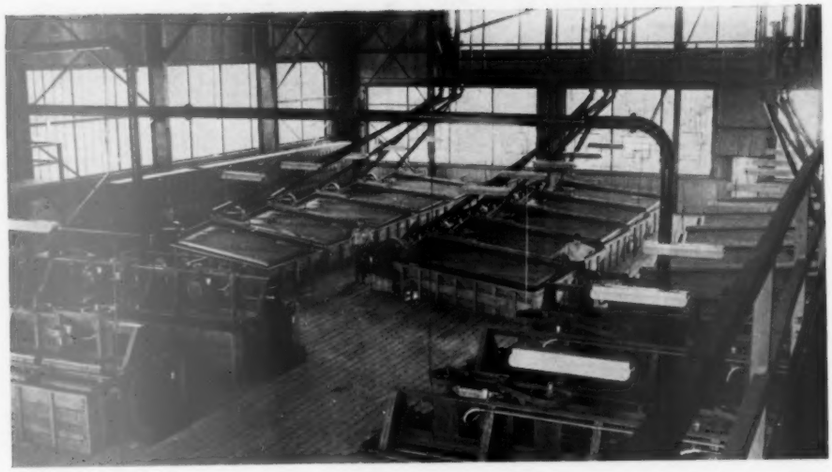
The producers in the Florida pebble-phosphate field were again active in expanding and improving their operations. Outstanding developments were the completion by one company of a new drying plant and a washing-and-flotation plant, and that by another of a large new washing-and-flotation plant to work a virgin deposit. In the Tennessee field a new plant was built by the National Agricultural & Minerals Corporation and there was considerable activity among other producers.

The new phosphate washing-and-flotation plant of the International Minerals & Chemical Corporation which is operating on a virgin deposit near Pembroke, Florida.

International Minerals The outstanding development of 1942 was the new Peace Valley washing-and-flotation plant of the International Minerals & Chemical Corporation, which went into operation in July, 1942. This plant is notable not only because it is the largest in the industry but also because of the advanced methods and equipment used. The washer can process an input of over 400 cubic yards of matrix per hour and the plant capacity of finished material is 3,000 tons in 24 hours. The flotation department will treat 235 tons of material per hour with a recovery of up to 95 tons.

The plant is located within a mile of Pembroke, Florida, and the mine was opened a short distance from it in a high-grade virgin de-

In this view of the flotation department of the International Minerals plant are shown a 40-foot hydroseparator, sizers, classifiers and other equipment.



Some of the diagonal-deck concentrating tables and froth-flotation cells in the International Minerals plant.

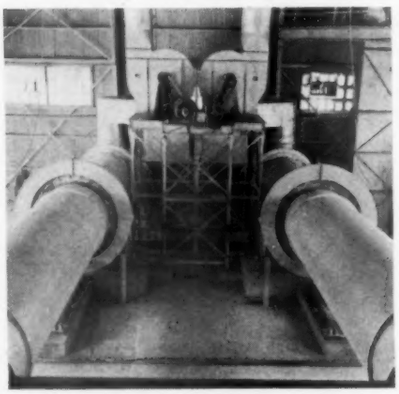
posit. Stripping of the overburden is done by a Marion electric drag-line with a 9-cubic yard bucket and a 150-foot boom. The matrix is dug by a Bucyrus-Erie electric drag-line with a 5-cubic yard bucket and a 125-foot boom. The latter piles the matrix on the ground where two hydraulic giants sluice it into a sump. A 12-inch Georgia Iron Works centrifugal pump delivers the matrix through a 14-inch line to the washer.

Most of the equipment in the washer was brought from another of the company's mines which has been worked out. This equipment and some new equipment were combined in a different flow-sheet to provide greater capacity than that obtained from the dismantled plant. All the equipment has been provided in duplicate so that only half of the plant needs to be shut down in case of the failure of any piece of equipment. Stationary screens are used to scalp out the minus $\frac{3}{4}$-inch material to the flotation plant and trommels feed the plus 1½-inch material into McLanahan & Stone single-roll crushers. Vibrating screens feed the $\frac{3}{4}$- to ⅜-inch material into Dorr rake classifiers and the ⅜- to 1½-inch material to series of two Georgia Iron Works log-washers. The overflow from the classifiers and log-washers, along with the product of the roll-crushers, goes to a Hydroseal 10-inch *débris* pump which returns it to the preliminary flat screens in closed circuit. The product of each classifier goes to a pair of Tyler Hum-mer screens from which the fine rock is elevated into bins. The product of the final log-washer in each series goes to a pair of Hum-mer screens from which the coarse material goes to an Allis-Chalmers vibrating screen. The material falling through this screen is fine rock and that passing over it is coarse rock. Both are discharged into bins under which cars are loaded for shipment to the company's drying-and-grinding plant.

The fine material passing through the eight Hum-mer screens goes to a 6-inch Georgia pump which feeds it to the flotation plant along with the fines from the stationary screens.

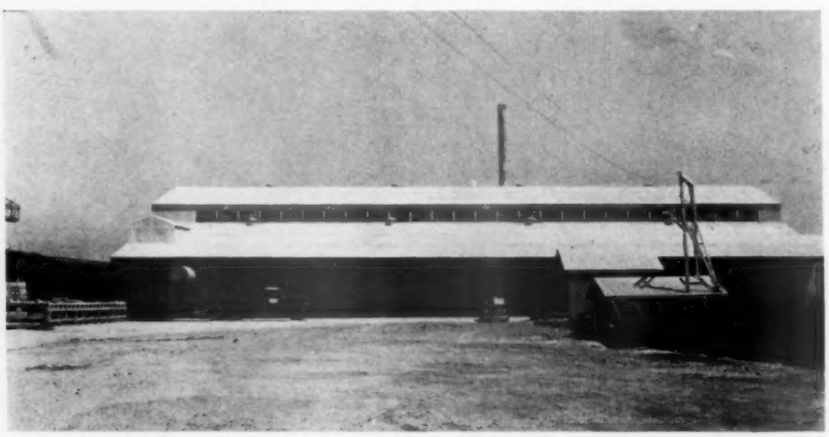
Most of the equipment in the flotation plant is new and its arrangement differs in some respects from that in any other unit operated by the company. The minus $\frac{3}{4}$-inch material is discharged into a 40-foot Dorr hydro-separator from which the underflow is pumped to a trommel, which is the first step in the table-concentration department. The trommel oversize is wasted, while the undersize goes to a settling box from which the underflow goes to six 6-pocket Dorr Fahrenwald sizers. The plus-35-mesh products of the sizers are pumped to table-feed bins from which the overflow is returned to the hydroseparator. The bin underflow goes to a Dorr rake classifier from which the overflow, together with the fines from the sizers and the overflow from the settling box, is fed to the 75-foot hydroseparator which is the first step in the froth-flotation department.

The rake product of the Dorr classifier goes through a rotary mixer, where flotation reagents are added, and is elevated to a distributor feeding the 15 Deister Concentrator Company No. 6 diagonal-deck concentrating tables. The middlings from these tables are returned to the rake classifier and the tailings go to a 30-foot Dorr thickener which also receives the concentrates from the rougher cells of the froth-flotation department.



The two rotary driers and dust-collectors in the American Cyanamid Company plant.

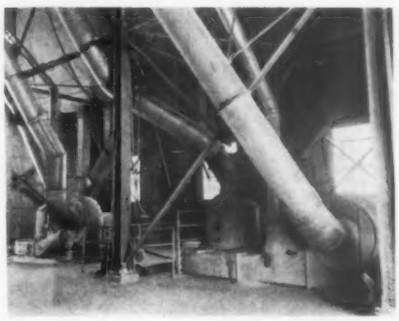
The overflow from the 40-foot hydroseparator goes to the 75-foot Dorr hydroseparator. The overflow from the 75-foot machine goes to waste, while its underflow is pumped to a feed bin over a Dorr rake classifier. The overflow from both machines is returned to the hydroseparator. The rake product goes to a mixer where reagents are added and is then fed to the 24 Type M S rougher flotation machines. Their



The new gypsum board and lath plant of the Pacific Portland Cement Company near Redwood City, California.

concentrates go to a 30-foot Dorr thickener from which the underflow goes to a pump feeding four mixers where more reagents are added. These feed a Dorr bowl classifier from which the rake product goes to four banks of six cleaner flotation machines.

The phosphate concentrates from these cells are discharged into the first-mentioned 30-foot Dorr thickener which also receives the coarse



The two gypsum grinding mills in the Blue Diamond Company's plant.

concentrates from the table-flotation department. The underflow of this thickener is pumped into concentrate bins from which railroad cars are loaded for the drying plant.

The filtrate from these bins and the overflow from both thickeners is pumped back to the 75-foot hydroseparator. The tailings from the rougher cells, the sand float from the cleaner cells and the tailings from the concentrating tables go to a waste pump.

The new drying plant of the American Cyanamid Company at Brewster, Florida, supplanted an old plant at the same location which was kept in operation until the new one was completed. The new plant draws its material from the same bins and the finished product goes to the same storage and loading building.

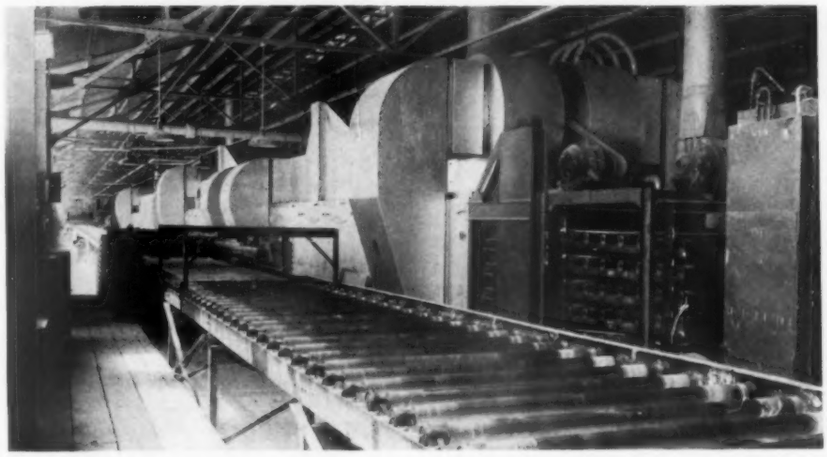
Plus-20-mesh pebble rock and 20- to 200-mesh flotation-plant concentrates are stored and dried separately. A series of reclaiming conveyors feed this material to a main conveyor feeding the two 30-ton drier-feed bins. Traylor 48-inch table-feeders discharge this material into the two 6- by 60-foot Traylor all-welded rotary driers. These are unlined but are equipped with lifters at their hot ends. They are fired at their feed ends by Bethlehem-Dahl burners using Bunker C fuel oil. The discharge end of each drier is connected by a duct and hood to one of two Western Precipitation Corporation 54-tube Multiclone dust collectors.

These driers have a combined capacity of about 130 tons per hour of flotation concentrates or 90 tons of washer rock. Their products and the collected dust are carried by Link-Belt conveyors and elevators to the 30,000-ton storage building. One of these conveyors operates in conjunction with a Merrick Weightometer which records the dry weight of the material going to storage.

The new gypsum grinding, calcining and board and lath plant of the Blue Diamond Company near Las Vegas, Nevada. At left is tramway from mine and crushing plant.

The Phosphate Mining Company, which put in operation its first flotation plant in 1941, is building at Homeland, Florida, a new washer, which is expected to be in operation early in 1943.

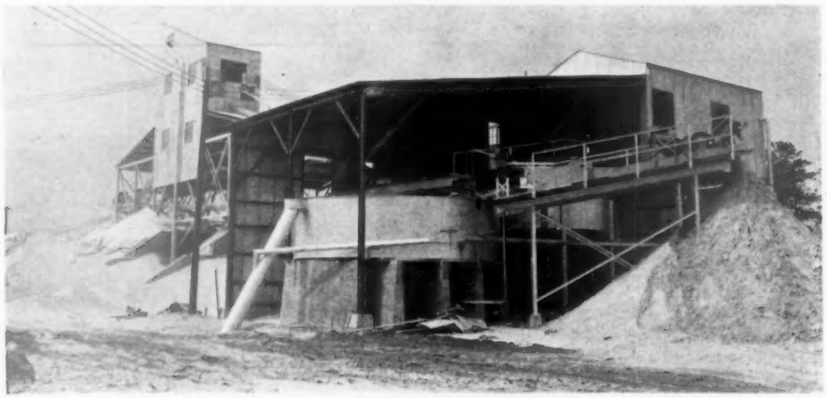
Gypsum According to the U. S. Bureau of Mines, the volume of gypsum and gypsum



The 245-foot, 6-deck board and lath drier in the new Blue Diamond plant. Accelerating live-roll section of board-machine conveyor is at left.

The Bellefonte, Pennsylvania lime plant of the National Gypsum Company with new 425-foot kiln at left. In left background are the pulverized-limestone and hydrating departments.

The new Number 2 silica-sand plant of the Whitehead Brothers Company at Dividing Creek, New Jersey.



Another view of the Whitehead Brothers Company plant with thickener, hydroseparator and fine-sizing rake in foreground.

products sold in 1942 was about 6 per cent. below that of 1941. This decrease is attributed to the curtailment of civilian building construction, which apparently outweighed the huge volume of war construction and the increased demand for gypsum in cement manufacture and for agricultural use. Domestic crude production dropped off sharply after an early increase probably caused by the cutting off of imported supplies.

The industry has overlooked no opportunities to find new applications for its products. When metal-lath production was stopped, a fireproof laminated gypsum roof plank was devised. Steel partitions were replaced by inch-thick fireproof gypsum panels and weather-resisting exterior boards took the place of wood sheathing and siding when the shortage of lumber became serious. The demand for gypsum plasters for pottery molds and plate-glass polishing dropped off, but molding plasters were developed which speed the precision casting of nonferrous metal parts for airplanes, tanks, etc.

The Pacific Portland Cement Company has been an important figure in the cement industry on the Pacific Coast since the turn of the century and since 1911 has been producing gypsum for use in its cement plants and plaster mills. Only in the past year, however, did the company enter into the manufacture of gypsum board and lath with a new plant near Redwood City, California. This plant is equipped to calcine and grind raw gypsum, but at present calcined gypsum is being shipped from its plaster mill at Gerlach, Nevada. Two Raymond Imp mill calcining and grinding systems are installed.

An Ehrsam board machine of conventional design is used in this plant. It is 287½ feet long from the forming rolls to the cut-off knife with a 151½-foot belt-conveyor section and 136 feet of power-driven rolls. Ahead of the knife is an Ehrsam patented lath punch. An accelerated-roll section feeds the laths to the Coe automatic cross-transfer section which in turn feeds them to the tipple of the Coe steam drier. This drier has six decks and is 230 feet long with three drying zones. This equipment has produced as much as 185,000 square feet of ⅜-inch board or 196,000 square feet of ⅜-inch perforated lath in 24 hours.

The Blue Diamond Company had for many years operated a gypsum deposit at Blue Diamond, Nevada, from which gypsum was shipped to its Los Angeles yard for processing. No gysum board or lath was made, however, until early in 1942, when a new plant was put in operation near the deposit. The board department of this plant is entirely new but much of the other equipment came from the Los Angeles plant, which was abandoned when this one was built.

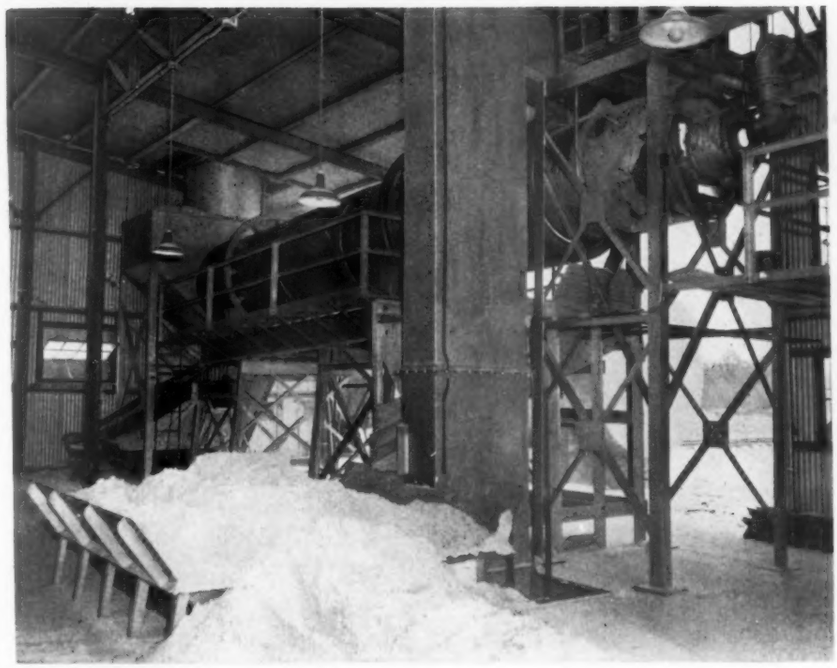
The gypsum, which is obtained by a combination of open quarrying and underground mining, is hauled in trucks to the crushing building. The minus-1½-inch product of this department is lowered 800 feet by a 3,500-foot tramway to the new plant. There it is screened and discharged into bins for shipment to cement plants or discharged into bins or stock-piles for plant feed. Two Raymond roller-mills make the various finenesses required for different grades of plaster and

The drier and screening-and-loading building of the Manufacturers Mineral Company's new silica plant near Chewelah, Washington.

these go to separate bins. Calcining is done in three Ehrsam kettles from which the products go to screens or direct to the board plant. The coarse material from the screens is reground by eight Ehrsam 36-inch buhr mills and this product, with the screen fines, goes into bins for various types of plaster. Fiber and retarders are added in Ehrsam mixers and the finished plaster are then sacked for shipment.

The material for the board plant goes into bins from which it is fed to an Ehrsam board machine. This has the usual mixers, master rolls, belt- and live-roll conveyors, lath punch and knife. A cross-transfer system feed the board or lath to a tipple which supplies the 6-deck 245-foot Coe drier. Steam for the drier is supplied by a Babcock & Wilcox Stirling boiler. Most of the product is loaded direct into cars on gravity conveyors. An Automatic lift truck is used to store board and lath, to handle rolls of papers, etc.

Numerous improvements were also made to existing plants. Among these was the installation of a 30- by 60-inch Pennsylvania Super Armorframe crusher in the Rotan, Texas, plant of the National Gypsum Company.



Interior of the new Whitehead Brothers Company drying plant showing drier with its oil burner, feed elevator and vibrating screen.

Lime and Dolomite According to the U. S. Bureau of Mines the sales of lime and dead-burned dolomite in 1942 were down 11 per cent. from the record year of 1941, when 6,079,416 tons was sold or used by producers. This decrease is attributed chiefly to the shrinkage of civilian building construction which more than offset the increased use of lime and dead-burned dolomite for some other purposes in connection with our growing war effort. Quicklime sales fared better relatively than did hydrated-lime sales.

From the unofficial fragmentary information now available it seems apparent that the demand for both quicklime and hydrated lime early in 1942 exceeded that for the same months of 1941. The former dropped off sharply after the middle of the year to a level considerably below that of 1941 and apparently showed a slight loss for the year. The sales of hydrated lime began to drop below 1941 figures in April and stayed far under them for the remainder of the year.

The shipments of lime (both quick and hydrated) for agricultural use was considerably over 1941 figures during the first half of the year. Both types dropped below those levels in the closing months of 1942 but their totals for the year were apparently up substantially over those of the preceding year.

The sales of both types of building lime remained close to 1941 levels early in the year but dropped off rapidly later to produce a considerable net loss for the year. Quicklime fared somewhat better than hydrate and there was apparently some revival of the demand for this product late in the year.

The sales of quicklime for chemical purposes remained substantially above 1941 levels for the first half of the year but dropped below later. There was apparently a net gain for the year. The sales of chemical hydrate dropped below 1941 levels after the first quarter and there was apparently a net loss for the year.

The outstanding lime-plant development of the year was the completion by the National Gypsum Company of a $2,000,000 improvement and expansion program at its Bellefonte, Pennsylvania, plant. This plant was built by the Chemical Lime Company in 1936 and was taken over by National in 1941. The improvements made affected nearly

The new plant which supplies steam and power for the extensive operations of the Ottawa Silica Company near Ottawa, Illinois.

The new slag crushing-and-screening plant of the Indiana Slag & Ballast Company at Indiana Harbor, Indiana.

every department of the original plant and new departments were added for the production of hydrated lime and pulverized limestone.

The existing 8½- by 7- by 400-foot Traylor rotary kiln was supplemented by a new 8- by 425-foot Traylor kiln of all-welded construction. The rate of raw-material feed is controlled by a Schaffer Poidometer and the product passes through a 7½- by 44-foot Traylor tubular-type rotary cooler. This kiln is fired with coal by a Raymond bowl-mill.

The new hydrating department was designed for flexibility so that any desired type of product can be made. Lump lime can be fed to a circuit consisting of a Jeffrey hammer-mill and a Deister Concentrator Company Leahy vibrating screen before going to the hydrator-feed bin. Finer lime by-passes this equipment direct to the bin.

The Number 1 Schaffer continuous hydrator has a capacity of about 12 tons per hour. Its product goes to bins over two Raymond Number 3 automatic pulverizers which are equipped with double whizzer separators and cyclones vented to bag-type dust-collectors. The hydrated products are stored in four reinforced-concrete storage silos which, with the inclosed star bins, have a total capacity of 1,000 tons. Under each silo and bin is a Valve Bag 3-tube packer.

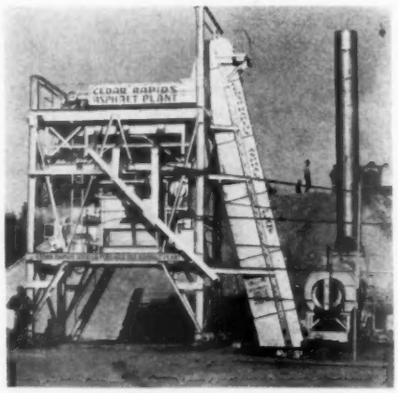
The minus-⅜-inch stone ordinarily used in the limestone-pulverizing department is diverted from the main stream of material to the plant into a 400-ton-bin. A Link-Belt pan-feeder controls the discharge of this stone into the 6- by 50-foot Kennedy-Van Saun rotary drier. When stone larger than ⅜ inch in size is fed to the drier a Tyler Niagara screen scalps oversize to a Pennsylvania reversible hammer-mill. Otherwise the dried material goes direct to a pair of Tyler Hummer screens which also scalp to the hammer-mill which is in closed circuit with them. The material falling through the Hum-mer screens goes to a mechanical separator which makes 16-mesh glass rock as tailings. This material goes direct to cars for shipment.

The separator fines go to bins over two Raymond 5-roller high-side mills which are equipped with double whizzer separators. These are connected to cyclones which discharge to a bin over two 3-tube Valve Bag packers. This department has a capacity of about 25 tons per hour of which about half is glass stone and half agricultural limestone or mine dust.

Industrial Sand The production of industrial sand was stimulated in 1942 by a large increase in the demand for molding sand due to the rapid expansion of our war effort. This more than compensated for the decreased demand for sand in the manufacture of glass and other peace-time industrial products. A number of new plants were built and many others were enlarged or improved by the installation of new equipment.

The best of the new industrial sand plants built in recent years was that of the Whitehead Brothers Company at Dividing Creek, New Jersey. This Number 2 plant supplements another one built in 1937 and makes the same products with entirely different equipment. A new drying plant was also built to supplement the original one. This makes each plant entirely independent of the other and they have a combined capacity of over 500,000 tons annually.

A dredge with a 4-inch Millville pump supplies the raw material to Plant Number 2 where it is discharged into a box. This splits the flow to a pair of conical screens



The new aggregate-bituminizing plant of the W. P. McDonald Construction Company.

which waste any plus-14-mesh material. The material falling through this screen goes to a 17-foot Dorr hydroseparator for desilting.

A 4-inch Wilfley pump feeds the desilted sand to an 8-pocket Fahrenwald sizer. The eight grades of sand made by the sizer can be discharged separately or in any desired combinations to any of or all the four Dorr rake classifiers. A 2-foot

The new plant of the Black Hills-Keystone Company near Keystone, South Dakota, which processes lepidolite and other rare nonmetallic minerals.

Some of the concentrating tables and screw-classifiers in the Black Hills-Keystone plant.

single rake makes the finest size, a 3-foot double rake makes the second size, and two 4-foot double rakes make the two coarsest sizes. All are discharged to ground-level storage.

The overflows from the rakes, the sizer and the hydroseparator go to a 24-foot Dorr thickener, whose product goes to a pump feeding a Dorr 4-foot double-rake classifier which makes a fifth and finest grade of sand.

The graded sand to be dried is trucked to a hopper from which it is fed into a 5- by 30-foot Millville rotary drier. Following the drier is a 10-mesh screen which removes any foreign matter or lumps before the sand goes to the car-loading elevator.

An 8-foot by 60-inch Hardinge conical mill was also installed for wet grinding sand to increase the 20- to 100-mesh fraction.

The Ottawa Silica Company improved its mining and processing operations near Ottawa, Illinois, by supplementing an old boiler department with a new and modern power-plant. This combination now produces all the steam and power needed in these operations. In addition to the large volume of steam required the new plant has been generating and distributing about 30,000 kilowatt-hours of power daily.

The coal used is stored by a Sauerman Crescent drag-scraper system and is conveyed to the boiler-feed bins by a Stephens-Adamson Redler conveyor system. The coal is weighed out of these bins by Richardson automatic batching scales to the stokers of the Williams Bros. 455-horsepower, 3-drum, water-tube boilers. Clarage draft fans are used. The ashes are moved to waste by an Allen-Sherman-Hoff sluicing system.

The two Allis-Chalmers turbines are of the single-cylinder condensing type with generators rated at 1,250 kv.-a. at 70 per cent. power factor, Electric current is generated at 2,300 volts, 3-phase, 60 cycles which is used for the larger motors. Three transformers reduce its voltage for the smaller motors.

The Hardinge Company installed its hydro classifier and screw-dewaterer in a number of plants including those of the Virginia Glass Sand Company and the Industrial Silica Company. A 4- by 10- foot Hardinge ball-mill was installed by the New Jersey Silica Sand Company for the production of 20- to 100-mesh sand. The Nugent Sand Company installed an XF-10 Ruggles-Coles drier for the production of dry foundry core sand.

The Manufacturers Mineral Company, an established producer of nonmetallic minerals in the Pacific Northwest, late in 1942 completed a plant for the production of silica from a deposit near Chewelah, Washington. This action was prompted by the growing demand for high-grade silica sand in this area and the possibility of using this product in the ferro-silicon process of magnesia manufacture.

The material is being hauled from the deposit in trucks and is discharged into a hopper at the plant. It is then elevated to a 1-inch grizzly from which the oversize goes into a bin for loading into cars. The material falling through the grizzly is elevated to a trommel which makes one size of gravel and two sizes of sand. The gravel and the ⅛- to ¼-inch sand also go to car-loading bins.

The minus-⅛-inch sand goes to a sand cone which removes the plus-200-mesh material. The fines in the overflow go to a cone classifier which makes a 200- to 325-mesh product and its overflow in turn goes to settling tanks. All these fine products are discharged to storage piles.

The plus-200-mesh sand goes to another cone classifier which overflows to the fine-sand classifier. The product goes to four Number 6 Wilfley concentrating tables and is then discharged to drainage bins. Cars can be loaded direct from these bins or a belt-conveyor can feed these materials singly or blended to a 56-inch by 36-foot rotary drier. The dried sand is elevated either direct to bins or to a screen for sizing before going to storage.

The Thompson Silica Company built a 1,000-ton per day plant at Thompson, Ohio, which is supplying silica sand to be used in the manufacture of ferro-silicon in a new Vanadium Corporation plant.

George F. Anderson built a new plant at Okanogan, Washington, to supply silica sand for use in paper manufacture to replace China clay which is no longer available.

The Hardy Sand Company built a new molding sand plant at Pigott, Arkansas, which includes in its equipment a rotary drier.

A new silica processing plant is reported to have been built by the Mississippi Valley Silica Company near New Orleans.

The Manby Sand Company built a new molding-sand plant near Byron, Illinois.

Slag The slag industry apparently had a prosperous year, due to the close proximity of its plants to the steel mills and fabricating and manufacturing plants which have had a mushroom growth. Several new plants were built to meet the demand and many others were expanded and improved.

A new 200-ton per hour crushing-and-screening plant was built by the newly-formed Indiana Slag & Ballast Company on the property of the Inland Steel Company at Indiana Harbor, Indiana. The molten slag is cooled in a 20,000-cubic yard pit near the plant and is loaded by a 1¼-cubic yard Thew Lorain shovel into trucks and Euclid tractor-drawn wagons. From an apron-feeder and a belt-convevor the slag goes to Pioneer double-deck vibrating screens for sizing. The oversize slag is reduced by a 40- by 22-inch Diamond double-roll crusher and is fed by a return belt to the main belt-convevor.

The Birmingham Slag Company built a new plant at Alabama City, Alabama, to replace one of smaller capacity. A shovel loads the slag into trucks which discharge it into a hopper. A Jeffrey feeder and pan-convevor feed to a 4- by 8-foot Symons single-deck scalping screen from which the oversize goes to a Symons 5½-foot cone crusher. A belt-conveyor conveys the undersize from the crusher and screen to a screening station, where two Allis-Chalmers Ripl-Flo screens make two finished sizes which are stock-piled by belt-convevors. The oversize goes to a 6-inch McCully gyratory crusher and is returned to the main convevor. Another belt-conveyor carries the undersize from these screens to a second station where two finished sizes are made by an Allis-Chalmers Low Head screen. These are also stock-piled by belt-conveyors. At the third station a Symons screen makes two fine

products which are stored in bins. All the piles of coarse slag are over a reclaiming tunnel. Any size or blend of sizes of slag can be loaded into cars, trucks or sent to a ready-mixed-concrete plant by means of belt-conveyors. All the conveyors in this plant were supplied by the Continental Gin Company.

The Wheeling Steel Company installed a 21- by 30-inch crusher in its plant at Steubenville, Ohio.

Bituminized Aggregates The production of bituminized aggregates in 1942 probably reached a new peak due to the use of this material in many new airports and airport expansions and in the many army camps, ammunition dumps and other war projects built during the year. This work called into use most of the available portable and temporary-type asphalt plants and also took the output of many suitably-located permanent plants. This type of demand is expected to carry over well into the middle of 1943 and the maintenance of the finished projects should provide some demand later.

Those plants depending mainly on ordinary street and highway demands had their output seriously curtailed by the progressive restrictions placed on the use of bituminous material in highway work. Early in the year the use of this material was restricted in the 17 Atlantic seaboard states by the Public Roads Administration of the Federal Works Agency at the request of the Petroleum Co-ordinator. This ruling was later extended westward to the Rocky Mountain area and on October 5 was extended to the 10 Rocky Mountain and Pacific Coast states, putting conservation of asphalt on a nationwide basis. The use of this material is now limited to projects certified by the Public Roads Administration.

Many new plants were put in operation during the year, most of them of the portable or temporary type. A new plant of the permanent type was erected by the Southern Aggregates Corporation at its Greystone, North Carolina, crushed-stone operations. This plant uses granite screenings which are fed from a stock-pile by a tunnel reclaiming-conveyor system.

The Servtex Materials Company erected a new plant at its New Braunfels, Texas, crushed-stone operations for the production of cold-mix asphaltic concrete. This plant has a 2,500-pound mixer and a natural-gas-fired Simplicity drier and cooler unit.

C. W. Blakeslee & Sons, Inc., New Haven, Connecticut, adapted a Mixer-mobile portable concrete-mixing plant for the production of a special type of bituminized aggregate.

The W. P. McDonald Construction Company, Flushing, New York, purchased a Cedar Rapids Model "E" asphalt plant.

Industrial Clays The production of bentonite, kaolin, fullers' earth, and other industrial clays in 1942 continued the upward trend of the past few years. Bentonite production in particular continued to shoot upward and undoubtedly far exceeded the record output of the preceding year. The South Dakota field was particularly active and a number of the plants in that area were enlarged. A new plant is being built in North Dakota by the United Lignite, Coal & By-Products Corporation of Mandan, North Dakota. The initial output will be about 200 tons of colloidal bentonite daily.

One of the most active producers in South Dakota has been the F. E. Schundler Bentonite Company with a plant at Belle Fourche in that state. This company built its plant in 1934 and enlarged it in 1940 and again in 1941. Another expansion program now being completed includes the installation of a fourth rotary drier and a third grinding mill.

The United Clay Mines Corporation installed in its Gleason, Tennessee, plant a drying-and-grinding mill for the processing of ball and sagger clays. The moisture content of the raw clay is about 25 per cent. and this is reduced by the mill to less than 5 per cent. in the finely-ground finished product.

A roller-mill was installed by the American Colloid Company in its Belle Fourche, South Dakota, plant for the fine grinding of bentonite clay. This supplements other mills of the same type. The clay is ground to a fineness of about 95 per cent. through a 200-mesh screen and most of the product is sold as a bonding clay for foundries.

The Georgia Coating Clay Company, Macon, Georgia, has installed a third roller-mill for the processing of kaolin. Most of this company's output is sold to the paper and rubber industries.

Critical Minerals Many of the other nonmetallic minerals industries not yet mentioned belong in the group of critical minerals which are vital to the prosecution of our war effort. Some, including potash, sulphur, fluorspar and bauxite were produced on a fairly large scale before the war and the existence of ample deposits made the expansion of their output merely a matter of adding to existing plant facilities. For other minerals such as high-grade mica splittings, graphite, asbestos, etc., we had depended chiefly on imports because of the lack of suitable deposits in this country.

Steps have been taken by the government to foster the production of the latter class of minerals and many new plants are being built and existing plants enlarged to meet the urgent demand for them. Much of this work is being financed directly or indirectly by the Defense Plants Corporation and the Metals Reserve Corporation. These agencies are also sponsoring a wide-spread and intensive search for additional deposits. This is being done in co-operation with the U. S. Bureau of Mines, the various state geological departments, the staffs of mining and engineering colleges, prospectors, and a large percentage of the qualified personnel of metallic mining companies. For obvious reasons little can be said about the results of this work except that it is in almost every case achieving the desired result.

The Black Hills-Keystone Corporation, which was formed in 1930, in June, 1942 put in operation near Keystone, South Dakota, the dry department of a new mill for the processing of various nonmetallic minerals. The wet department of the plant went into operation early in July. The new plant has a capacity of 100 tons in 24 hours and is a combination of dry screening, flotation and agglomerate tabling. It combines facilities for the treatment of low-grade lepidolite and ambligonite and will also recover cassiterite (tin ore) and tantalite. Micas can also be processed by flotation and agglomerate tabling as well as by dry screening.

The raw materials are obtained from two dikes, one containing mainly lepidolite and the other most of the other ores mentioned. Other deposits are also to be opened. The considerable quantities of feldspar mined are not processed in this plant but are shipped to another plant in the vicinity.

The equipment in this plant includes two Productive Equipment Corporation Gyroset screens, a Symons cone crusher, Denver Equipment Company Sub-A flotation cells and Wilfley concentrating tables, Akins classifiers, etc.

The Black Hills Tin Company is producing 100 to 150 tons of spodumene daily from its plant at Tinton, South Dakota. This plant was originally built in 1927 to produce tin but was shut down because of low-grade ore. In 1936 it was leased by the Fansteel Metallurgical Corporation and operated for the production of tantalite. Late in 1937 the present owners took over this plant and experimented with the flotation of spodumene. In 1940 milling was begun on a small scale in a pilot plant and the expansion of this plant was completed late in 1942. The equipment includes Denver Sub-A flotation cells, Wilfley concentrating tables, a Symons cone crusher, etc.

The Defense Plant Corporation has made commitments of nearly $400,000,000 for the production of magnesium which will make the capacity of this industry more than 40 times what it was in 1940. New plants for the production of this vital metal have been built or are under construction in all parts of the country. Various processes and raw materials are used in these plants. Some, like the Dow Chemical Company plant at Freeport, Texas, use salt water and lime made from oyster shells. Another uses waste magnesium chloride from the new refinery of the Union Potash & Chemical Corporation near Carlsbad, New Mexico. Still other plants use dolomite and salt from wells.

Other plants use magnesite ore as the raw material. The outstanding plant of this type is operated by Basic Magnesium, Inc. near Las Vagas, Nevada, and uses Dorr Clariflocculators, Hydrotreators and thickeners. The magnesite comes from a deposit near Luning, Nevada, where magnesium oxide is produced for the Las Vegas plant. It is hauled by Diesel trucks to a primary crusher, screens, and Symons cone secondary crushers in the quarry. The flotation process used includes Denver cells, Dorr classifiers and hydro-separators, Oliver filters, three Herreshoff furnace roasters, Hardinge Ruggles-Coles driers, coolers, etc.

The Northwest Magnesite Company built, at Cape May, New Jersey, a plant for the manufacture of synthetic magnesite from sea water and dolomitic limestone, for refractory use. There are three rotary kilns, one for conversion of the dolomite into process lime and two for the calcination of the final magnesium-oxide product. All these kilns are fired with powdered coal by direct-firing bowl mills.

The demand for flourspar has soared upward to meet the demands of steel mills, aluminum plants and other vital industries. Shipments from mines in 1941 totaled 320,669 tons, an all time "high" and 37 per cent over the 1940 output. The 1942 output undoubtedly set another new record. A number of new plants have been built and existing operations have been expanded, particularly in the Colorado, New Mexico, and Illinois fields. The General Chemical company has rehabilitated a mill at Boulder, Colorado, and is operating several mines in its vicinity. The Kramer mill near Salida should be in operation soon. The Zuni Milling Company at Los Lunas, New Mexico, is building a new $150,000 plant which will have a capacity of about 100 tons of concentrates daily.

The production of crude barite in 1941 was 40 per cent. over the 1940 total of 483,391 tons and, from all indications, the 1942 increase was even greater. To meet the increased demands the industry has expanded considerably and a number of new plants have been built. A number of new washing plants were erected in Missouri and there was also some new capacity in Arkansas.

An outstanding installation is that of the Baroid Sales Division of the National Lead Company at Magnet Cove, Arkansas. This 250-ton per day plant was built in 1940 and has since been expanded several times. The original concentrating equipment has been replaced by a flotation process. The crude barite is first crushed and passed through a Bendelari jig. It is then ground in a ball-mill in closed circuit with a Dorr bowl-type classifier followed by a Dorr thickener. This prepares the feed for six Denver Sub-A rougher flotation cells and four cleaner cells. The flotation concentrates are pumped to another Dorr thickener and are then filtered and dried. Another plant in this area is just being completed and extensive surveys of other deposits are being made.

Particularly active has been the search for sources of high-grade sheet mica and an important factor has been the Colonial Mica Corporation, agent for the Metals Reserve Company, which is making it possible for even sub-marginal mines to operate. As a result hundreds of mines are being opened or reopened in various parts of the country and plants for cutting and sorting the mica are being built. In North Carolina, for example, it is reported that more than 175 new mines were opened in a 3-month period. One of the new cutting and grading plants is that of the Sandy Ridge Mica & Mining Company at Walnut Cove.

There is considerable activity also in the Black Hills area of South Dakota. One of the new plants there is that of Mineral Mills, Inc., which is operating the Old Mike mine near Custer. This plant includes screening equipment for making scrap mica.

The Northeastern New Mexico field has come into prominence and is producing some high-grade sheet mica. One of the leading producers is the Taylor Beryllium Company which has properties in this area and a plant in Santa Fe.

In California a large deposit of mica near Jacumba in San Diego County is being developed by the Mica Gem Mining & Milling Company which is building a 100-ton treatment plant.

The Mineral Products Company of Phoenix, Arizona, has installed a pilot plant which uses the dry process and has a capacity of 3 tons per hour. A test plant for wet-processing has also been installed.

The Defense Plant Corporation has made commitments totaling nearly $700,000,000 for the production of aluminum. This program alone will result in capacity nearly three times the total 1940 output. Much of this expenditure has gone into the production of bauxite and the domestic output is now in excess of the 1941 requirements from both domestic and foreign sources.

The talc industry has also been active. One of the new plants is that of the Nevada Minerals Company at Cartago, Nevada. This is producing coarse material for use in use in manufacturing explosives and fine talc for the manufacture of high-grade talcum powders.

Edison Machinery to Be Used in Chile

Much of the equipment formerly used in the plants of the Edison Cement Corporation at West Orange, New Jersey is being shipped to Coquimbo, Chile, for reconstruction there, the Office of Inter-American Affairs has disclosed.

The machinery is said to be capable of producing 250,000 tons of cement annually. Purchase of the plants was made by Chilean interests through the Chilean Trading Corporation, the United States agency of the Chilean Development Corporation.

New Mexico Firm Helps Supply Current War Demand for Mica

The Taylor Beryllium mica plant. Henry Brownstone, treasurer, and Mrs. Clifford G. Taylor, wife of the president in foreground.

another P AND Q exclusive

ON OCTOBER 14, 1941, before the present urgent need for high-grade mica in the rapidly-expanding war industries was fully realized, the Taylor Beryllium Company, Santa Fe, New Mexico, was formed primarily for the production of beryllium. The material was obtained from claims either owned or leased by the company. Some of the twelve claims owned by the company and some of those leased were rich in mica and other rare minerals. As soon as the United States entered the war no time was lost in concentrating production on those claims richest in mica. On January 5, 1942, a plant in Santa Fe was leased and as many as 35 employees per shift have since been kept busy sorting and splitting the mica produced.

Intensive development of the company's properties was at once begun and the Metals Reserve Corporation approved the purchase of three complete sets of new equipment for opening and developing new mines. This equipment consists of compressors, hoists, drills, etc. On these properties 100-foot shafts are being sunk and drifts at the 50- and 100-foot levels are being developed in order to get capacity quickly. The company has also purchased contracts from other miners who have been supplying most of the mica processed in this plant. Mica is also being purchased from any other available sources.

Production is being stepped up as rapidly as possible and will soon reach 3 tons of mine-run book mica daily. This should yield about 3,000 pounds daily of condensor stock and spindle mica which are in greatest

One of the company's own mines. The Pino Alto, with crew and wife of one who does the cooking.

demand. Some rough trimmed mica is also being produced. At present the non-strategic scrap mica is being stock-piled as there has been little demand for this material.

These claims are all located in Santa Fe and Rio Arriba Counties from 5 to 75 miles north and northwest of Santa Fe. This district first began to produce mica in the early 80's from pegmatite dikes varying from 36 to 100 feet in width. Until recently most of the mining was done by Mexicans who only scratched the surface of these deposits with shallow open cuts and 15- to 30-foot tunnels. With the more modern methods now being employed any desired grade of mica can be obtained. The best grade, according to company officials, is a clear mica which is approved by the U. S. Bureau of Standards for all uses and is said to be equal to Indian mica in every respect.

The officers of this company are C. G. Taylor, president; S. C. Stannard, vice-president; Henry Brownstone, treasurer; Marie R. Taylor, secretary. James Porteus is superintendent of mines.

New Sorting Process for Small Flake Mica

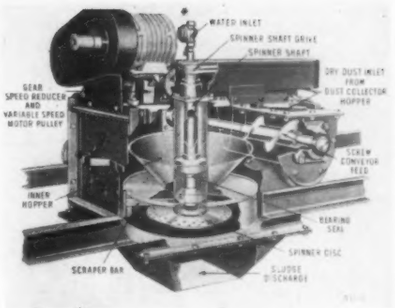
A new and more efficient process for sorting small flake mica, an essential ingredient in much of the electrical equipment being manufactured for the Nation's armed forces, has been developed by Bureau of Mines engineers and is available to commercial producers of this widely-used material, Dr. R. R. Sayers, director of the Bureau of Mines, reports.

The method already has produced test batches of closely-graded mica flakes which were used by a large commercial manufacturer of electrical equipment in producing radio parts. The process is known as "electrostatic grading," Dr. Sayers said in referring to a report prepared by Oliver C. Ralston, principal chemical engineer, and Foster Fraas, assistant chemist, Bureau of Mines.

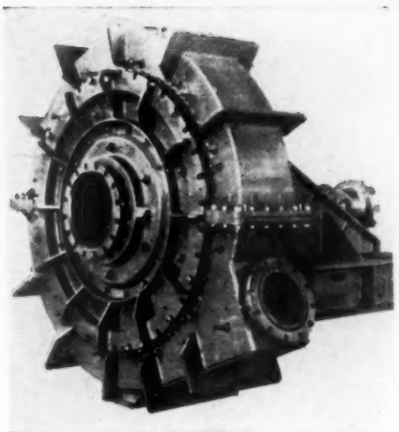
The United States has unlimited reserves of mica, suitable for grinding into powder, Dr. Sayers added, and the fine flakes of this mineral are mixed with various binders to produce materials of extreme durability, such as radio insulators and panels, plastics, moulded hard rubber, and special paints to withstand weathering. Prior to the development of the new method, powdered mica could be graded as to the area of its face surfaces, but not as to thinness of the flakes.

In their experiments, the Bureau engineers fed the closely sized powdered mica to a shaking table and subjected it to charges from a grid electrode above and parallel to the table. The thinnest flakes were buoyed most by electrostatic forces and thus were separated from the thicker flakes. Different thicknesses of mica were separated at different points along the shaking table. The "electrostatic grading" method was tested with other sorting methods and was found superior, the investigators asserted.

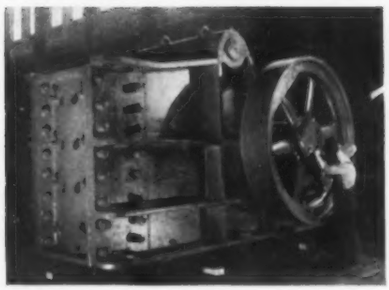
New Machinery, Equipment and Supplies...1942



A screw-conveyor feed has been added to the American wet-disposal unit to provide a constant and uniform rate of feed of discharged dust from dry-type dust-collectors into the sludge forming device. The unit, introduced in 1941 by the American Foundry Equipment Company, Mishawaka, Indiana, is designed to make a wet sludge of the dust discharged from the hoppers of dry-type dust-collectors by centrifugally mixing the accumulated dust with water or other liquids. This union is accomplished almost instantly, with the result that there is no possibility for the dust to disperse into the atmosphere. Dust which falls from the dust-collector hopper through a flexible coupling is deposited directly into the screw-conveyor of the wet-disposal unit.

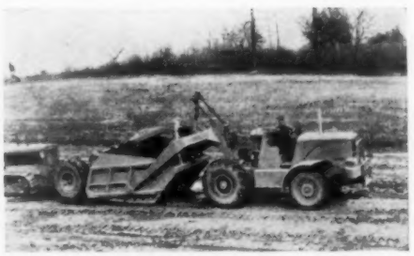


The Meckum lined-type pump shell is a new departure from the one-piece pump shell in service in practically all sand-and-gravel plants. The idea is simply a welded structural-steel housing that is split and remains in operation for many years in that it never wears out. The wear is taken on segmental liners which line the inside of the welded structural-steel pump casing. Patents have been applied for and some claims allowed. The patents are owned by the Meckum Engineering, Inc., Chicago.



The West Allis works of the Allis-Chalmers Manufacturing Company, Milwaukee, introduced an all-steel ore and rock crusher of an entirely new design. The jaw crusher completed and illustrated here was the first of several of this type on order. The new design contributes materially to economy of operation and an increase in capacity. The machines are built with rolled-steel, welded side frames to obtain greater strength and less weight. The new development will replace the older type of crusher made with cast-iron frames and reinforced by steel tension bolts.

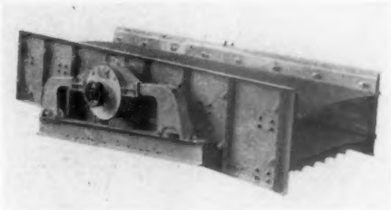
The new Seco screen-cloth vibrator was designed to keep wire-cloth meshes open on mechanically-operated vibrating screens. The vibrator imparts a continuous, automatic hammer blow to the panel on which the cloth is mounted. Force of impact is adjustable to eliminate blinding or plugging of meshes when screening fine sticky materials, thereby increasing efficiency and capacity.



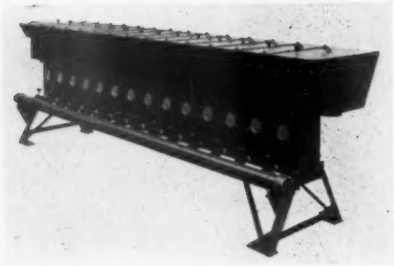
The Heil Company, Milwaukee, placed on the market a new Hi-Speed cable scoop that combines the efficiency of the Heil twin-cable scoop with the speed, economy and flexibility of the rubber-tired Diesel-powered Heil Hi-Speed tractor. Push-loaded with a crawler tractor, this unit digs a heaped 15-cubic yard load in 40 to 50 seconds and speeds away at travel speeds of 6 to 20 miles per hour, depending on road and grade conditions. The tractor, which furnishes the power for the scoop is a four-wheel unit equipped with a 150-horsepower Cummins Diesel engine as standard, although a gasoline engine or other Diesel engines are available.

To meet the needs of the many women welders now employed and being trained, the General Electric Company has announced a complete line of safety clothing designed especially for women welding operators. Safety, durability, and smart styling are combined in the new line which is based on the results of an extensive industrial survey of safety requirements for women welders. Featured are leather sleeves, aprons, jackets, leather gloves, and a special women's head and hair covering.

War-time operating conditions at a large Southern plant required that rock be hauled from shovel to crusher in comparatively large loads. A survey showed that Easton semi-trailers shuttling payloads of approximately 17 tons each would provide ample tonnage at lowest cost per ton. But, at the dumping end of the route the crusher-hopper was too small to take the 17-ton load in one discharge. To meet these unusual conditions, the container, which would normally be a body of 17 tons capacity, was divided into two sections which are dumped independently. (See picture above). The half-loads are handled easily in the small hopper opening.

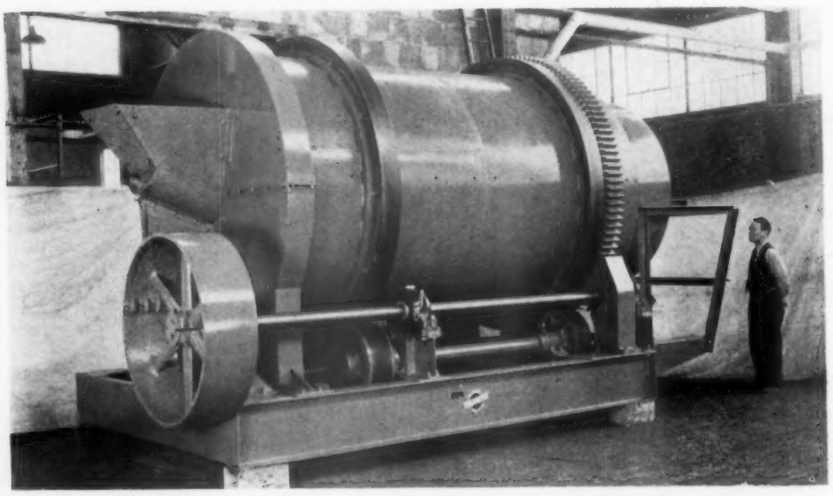


The Style "M" Robins-Vibrex, a new high-speed, unbalanced-pulley type vibrating screen that is said to stand up to overloads was announced by the Robins Conveying Belt Company, Passaic, New Jersey, in 1942. The new screen has a number of features designed to save maintenance costs.

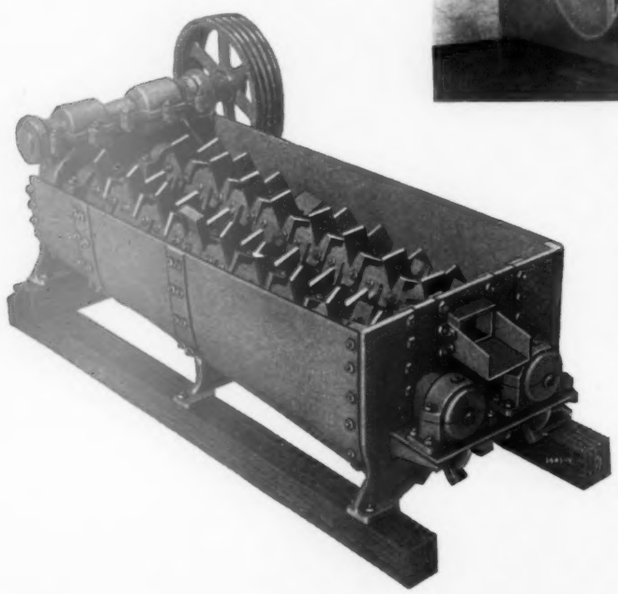


The Model SO classifier is the latest addition to the Deister Concentrator Company's line of hydraulic classifiers and embodies numerous improvements over its predecessor, the Concenco Type CPC Classifier. Primarily designed for the hydraulic sizing of feed to concentrating tables or similar devices, it has many other applications for the hydraulic sizing or sorting of sands or similar granular materials in the size range of minus—1/4" to slimes. Furnished in any desired number of cells from 2 to 14, it will produce as many hydraulically-sized products as there are cells plus a slime overflow. Each cell has three chambers: the pressure or clear water chamber at the bottom; the sorting column above and separated from the pressure chamber by the constriction plate; and the launder section above the sorting chamber. The Model SO classifier features all steel construction with steel liner plates inside cells to protect against abrasion.

The Browning Crane & Shovel Company's latest wagon crane, Model W154, was brought out only about a month ago. It has a lifting capacity of approximately 8 1/2 tons, when equipped with a 25-foot boom, and is powered by a Waukesha MZ gasoline engine which operates all functions.

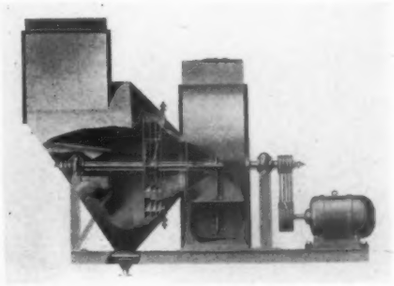


In 1942 Telsmith developed the new super-scrubber illustrated above. This equipment resembles very much the concrete mixer in the agitating discharge mechanism. The abrading action is like that in a Telsmith washing machine. The high-speed drum, drum liners and perforated end plates smack of ball-mill practice. The drum operates so rapidly that the gravel is carried up to a much higher point than is practical in a washing screen. Cascading down from this level, the impact of the falling rock disintegrates lumps of dirt and clay very rapidly. Such objectionable elements as shale and soft gravel are likewise broken up. The Telsmith Super-Scrubber is designed to carry a heavy load of aggregate and the drum is constructed accordingly.

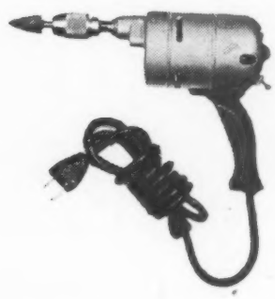


The Pennsylvania Crusher Company, Philadelphia, in 1942 brought out a line of modern log-washers, a 25-foot model being illustrated at the left. Design features are said to eliminate the building up of clay balls on the paddles. They can be supplied in lengths from 16 to 35 feet. "Pennsylvania" logs have a heavy-duty, worm drive. This drive is self-contained maintaining its alignment and efficiency. The steel boxes normally have rounded bottoms, easy to clean when replacing paddles. Rectangular boxes may be supplied if desired.

Heavy-duty mobile units for pressure lubrication of equipment on the job, known as Graco Convoy Lubers, are being offered by the Gray Company, Inc., of Minneapolis. Various models are available, each complete unit including an engine-driven air compressor, a set of powerful automatic lubricant pumps for dispensing three or more different lubricants under pressure, suitable lubricant tanks or container supports, a battery of hose reels, a spacious tool box, and a complete kit of hand guns and lubrication accessories.

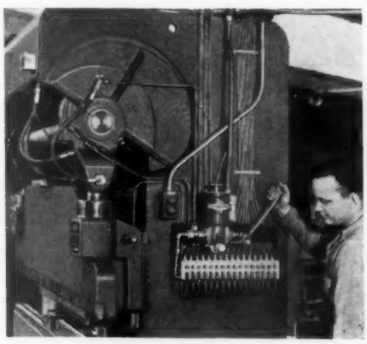


The new Schneible FiltreFan, made by the Claude B. Schneible Company, Chicago, is a collector unit consisting of a combination housing on which is mounted a rejector wheel and fan wheel. These two wheels are on a single motor-driven shaft. Solids are removed from the gas stream by means of this rejector wheel which throws the particles into a dead zone and hopper by centrifugal force.



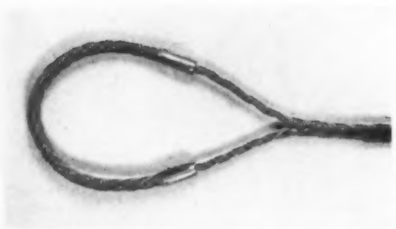
The Whiz electric tool, manufactured by the Paramount Products Company, New York, is an all-purpose machine of many uses about the plant and shop. Weighing less than 3½ pounds and operating from any light socket it is sturdy enough to do the heaviest drilling and grinding job and has a score of other uses.

The above portable crushing-and-elevating plant is being manufactured by the Straub Manufacturing Company, Oakland, California. Powered by a Caterpillar engine, the Kue-Ken balanced crusher is a high-capacity reduction machine. For this advanced type of jaw-crusher, the maker claims less jaw-plate wear, great output per horsepower, a high percentage of reduction in a single pass, and low lubricating expense.



The Lincoln Engineering Company, St. Louis, has incorporated many new features in its latest centralized lubricating system. The Lincoln Centro-Matic system, used on industrial machinery, is an easily installed system for lubricating all bearings. The system consist of a number of injectors—one for each bearing to be lubricated, each connected to the bearing by tubing or flexible high-pressure hose as required, and each individually adjusted to discharge the required amount of lubricant.

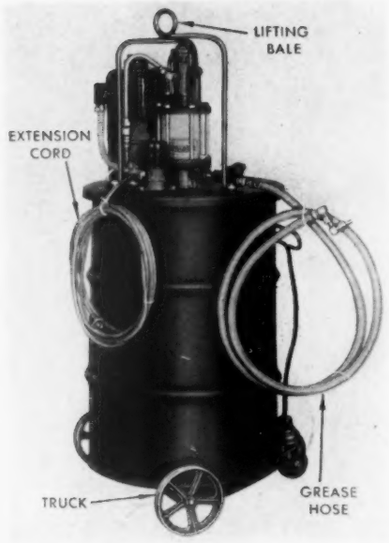
The Even-Spread lime spreader, made by the Even-Spread Spreader Company of Owensville, Ohio, has a V-type bed with two small augers in troughs in the bottom, lengthwise of the bed, with provision for easily changing speeds for positive delivery of different grades and applications of lime to the rear of the bed. The easily-detachable spreading mechanism, which is mounted crosswise at the rear, consists of small augers mounted in tubes with adjustable holes in the bottoms for different applications.



"Flatweave" is the trade name of a new wire-rope sling developed by the John A. Roebling's Sons Company to meet a universal need for a light, flexible, non-kinking, non-spiralling sling to handle loads more easily. Flatweave slings have a flat bearing surface which allows an even pressure on each of the six ropes which comprise the sling, thereby prolonging its useful life.

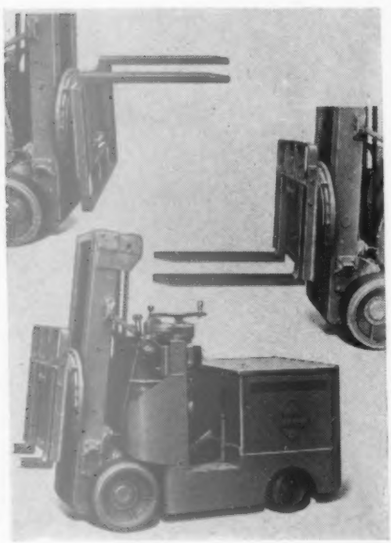
The outstanding feature of the new 65-ton Diesel-electric switching locomotive introduced by the Atlas Car & Manufacturing Company, Cleveland, is the construction of the drives which give surprising pulling ability, and which are said to insure dependable service. These drives are of the double-reduction spur-gear type, totally-inclosed, and arranged so that the motors are mounted as integral parts of the drives. The drives are mounted on the axles with Timken roller bearings and heavy duty ball bearings are used to mount countershafts and armature shaft. A third point support is provided, allowing the axles to follow track irregularities without developing twisting or binding strains.

The Model 805WM Mobilcrane was a 1942 addition to the Osgood line of one-man, one-engine-operated cranes mounted on pneumatic rubber-tired wheels. All operating functions of the machine are controlled by air power. Independent travel, independent boom hoist, extra wide chassis, 18 rubber-tired wheels, hydraulic steering, and air brakes are among its features. The extra width of the chassis, and the use of 18 wheels (12 at the rear, 6 at front), make it possible to lift loads up to 30 tons over the side of the machine as well as the ends, and carry the load to the desired location.

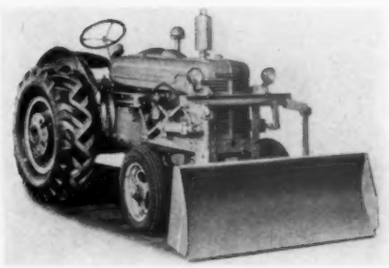


The Trabon Engineering Corporation, Cleveland, manufacturer of industrial lubricating equipment, recently introduced its new Series H electric-hydraulic barrel pumps. These pumps are operated simply by plugging the long extension cord into an electric outlet, allowing their use around a plant any time and at any place an electric line is available.

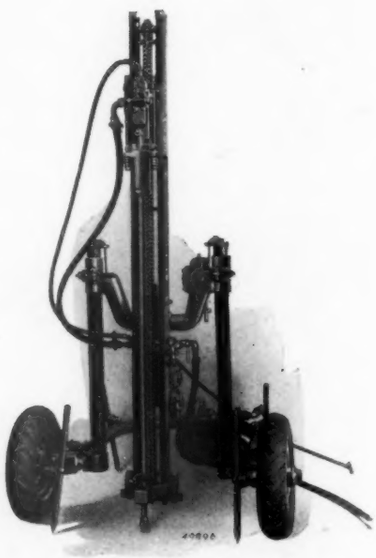
Smith-Mobile truck-mixers and agitators, manufactured by the T. L. Smith Company of Milwaukee, are now furnished with a combination feed chute and closing door support that is self-aligning. It eliminates the need for manual adjustments and assures smoother operation.



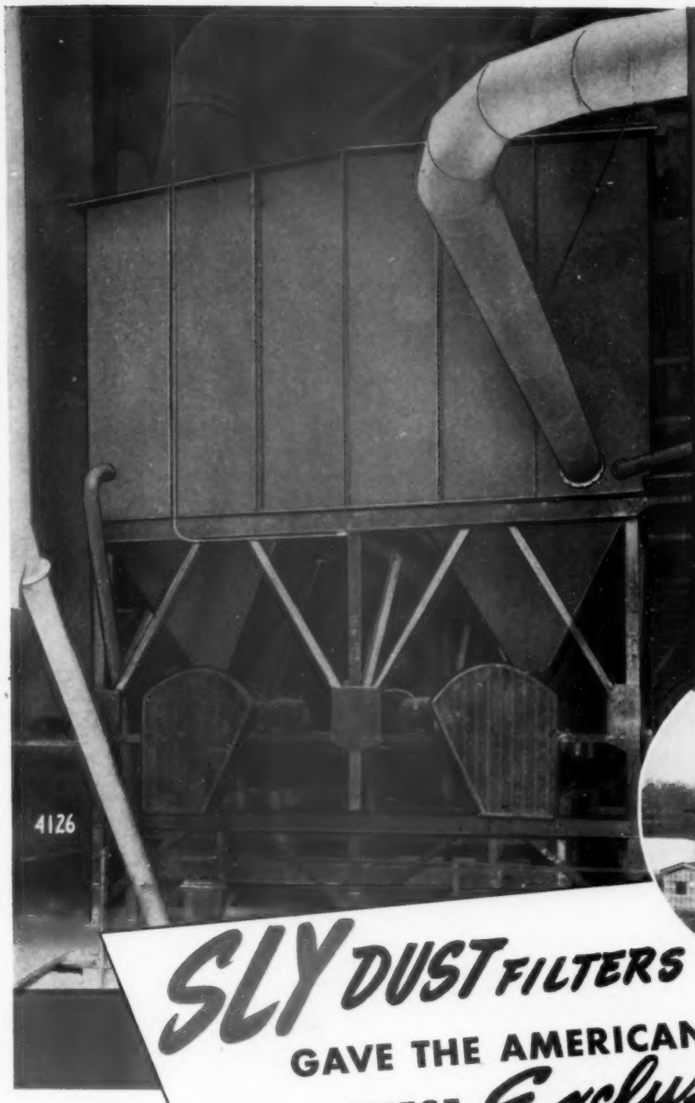
The Elwell-Parker Electric Company, Cleveland, is supplying its center-control truck, Type F-23T, with forks on a rotating base capable of making a complete revolution. Should the work call for only a partial revolution, however, the base can be provided with stops to limit the swing to any angle up to 180 degrees. Rotating forks increase the usefulness of the truck and adapt it to a wider variety of jobs.



A small Model 282 Baker Hydraulic bulldozer, developed for use on light wheeled tractors is hydraulically controlled, being powered by a Baker rear power take-off hydraulic-pump unit. The blade is lifted and lowered by dual cylinders and makes a 6-inch cut. Its speed, flexibility and size adapt it for use in mines for mucking, for conveyor feeding and for use on open-pit mine and quarry floors for clean-up and shovel-feeding work.



New features have recently been added to the well-known X-71WD Drifter, manufactured by Ingersoll-Rand Company. This drifter has been developed for wagon-drill service, in which the drilling of deep holes is usually required. New features include a positive method of blowing—a method which directs more blowing air through the drill steel. Thus, little air escapes around the sides of the shank. This is considered a major improvement over the method formerly used.



There are three Sly Dust Filters in use in this plant. The one shown at left filters the fines out of 41,000 cu. ft. of air per minute, exhausting crushers, grinders, magnetic separators, screens and conveyors. The collected fines are conveyed continuously from the filter hoppers to two 75-ton storage tanks.

Processing plant of the American Nepheline Corp., Rochester, N. Y.

SLY DUST FILTERS GAVE THE AMERICAN NEPHELINE CORP. THESE *Exclusive* ADVANTAGES

1. Greater filtering capacity because of more filtering cloth.
2. Taut bags (patented) save power and improve dust removal.
3. Bags more easily replaced.
4. Automatic control (any degree) minimizes or entirely removes the human factor.
5. Simpler shaker mechanism results in savings in maintenance and operation.

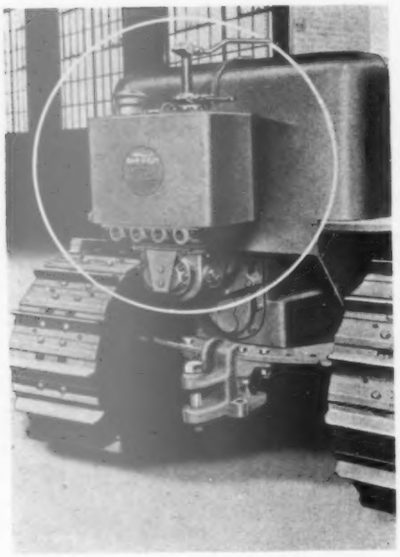
These dust filters at the American Nepheline Corp. were originally installed to cope with a dust nuisance, but it was soon found that the fine product had value and could be profitably sold.

Ask for Bulletin 98 and tell us about your dust problem so that we can write you fully. Sly dust control is not expensive.

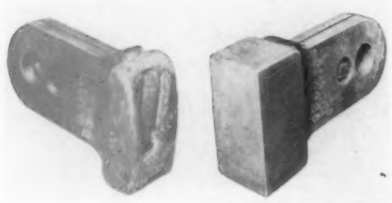
THE W. W. SLY MANUFACTURING CO.

4745 TRAIN AVENUE — CLEVELAND, OHIO

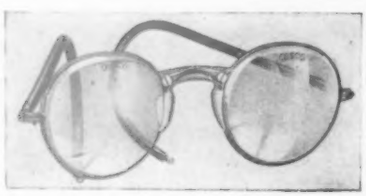
SLY
INDUSTRIAL DUST CONTROL



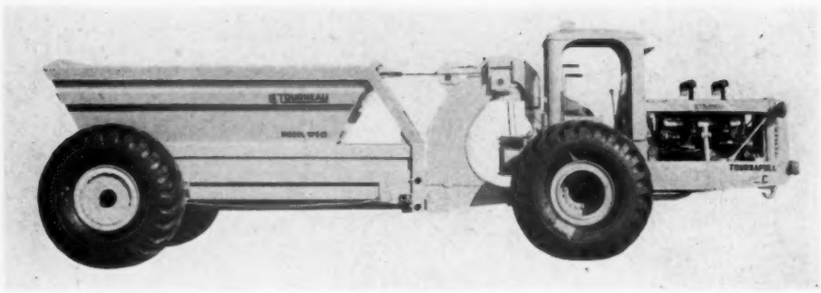
The road-machinery division of Gar Wood Industries, Inc., Detroit, announced the production of a new type of hydraulic-control unit for operating heavy-duty, material-moving machinery drawn by industrial track-type tractors. The unit converts mechanical power from the tractor motor to flexible hydraulic power for transmission to the hydraulic jacks on earth-moving scrapers, road-builders, bulldozers and rippers.



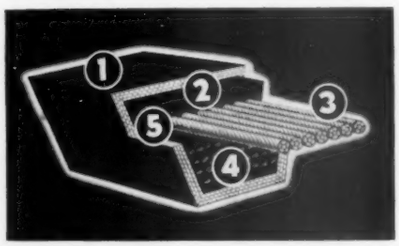
The Clark renewable-tip pulverizer hammer, announced by the American Manganese Steel Division of the American Brake Shoe & Foundry Company, consists of a weighted manganese-steel head connected to the rotor by two matching arms or bars of manganese steel. On the lower end of each bar are hooks which engage internal pockets in the head. The bars are bolted together under the eye so that they form a one-piece arm, yet they are easily disengaged from the service worn head by unbolting.



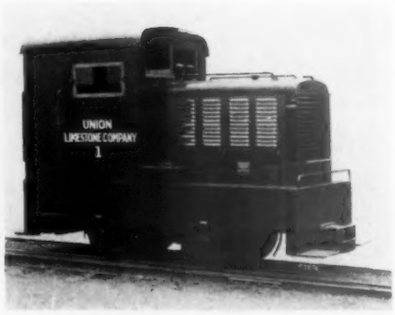
Something radically new in the making of spectacle-type goggles easier and more comfortable to wear is claimed for the new "comfort-bridge" feature announced by the Chicago Eye Shield Company. The bridge is a single unit, molded out of non-flammable plastic material including wide bearing "jumbo" nose pads.



In order to fully utilize the power and speed of the Super C Tournapull, R. G. LeTourneau, Inc., introduced the W210 Tournatrailer with a heaped capacity of 17 cubic yards. This unit has been designed with flared side and end walls for quick, accurate loading by drag-line or shovel. The W210 Tournatrailer is powered by the 150-horsepower Super C Tournapull for fast pickup and travel, quick spotting and maneuvering. Four forward speeds: 2.6, 4.4, 8.1 and 14.3 m.p.h. and reverse of 2.2 m.p.h. give travel speeds for all job conditions.



This new black, Goodyear E-C Cord Multi-V belt is made in all standard cross-sections and lengths is sold in sets, precision matched under operating tensions. Reference to the illustration shows: 1. The heavy, super-tough black cover; 2. tension section; 3. neutral plane with heavy endless load-carrying compass cords; 4. compression section; 5. insulating gum.



Construction of this H. K. Porter Diesel locomotive differs from the standard line of Porter Diesels in the method of driving. Instead of employing standard forged steel side rods the locomotive is driven by means of a heavy-duty chain, thus eliminating the overhang of side rods. This feature, together with the fact that the wheelbase is only 4 feet 9 inches, simplifies negotiation of extreme clearances and sharp curves. Frames and bumpers are constructed of heavy structural steel, welded together and strongly braced lengthwise and crosswise.

To standardize and simplify its scraper line, R. G. LeTourneau, Inc., announces the Model D. Carryall which will replace former models X and Z. The improved and newly designed small scraper has a struck capacity of 3.5 cubic yards. The Model D incorporates the same features of design and operation that are standard on all larger models.

The D-505 drifter was a 1942 addition to the Ingersoll-Rand family of rock drills. It incorporates many new and improved features, and is said to be the fastest and most durable drifter ever produced by the company. Exhaustive tests have shown that the efficiency of the D-505, based on inches drilled per cubic foot of air at 90 pounds pressure, is 34 per cent. greater than that of our previous 4-inch bore machines, and 52 per cent. greater at 70 pounds pressure. Certain outstanding features contribute particularly to the ruggedness of the D-505. For example, the wall section of the front-head is 10 per cent. thicker than that of the previous 4-inch drifters.

The Victory Program ★ ★ ★ ★ *and Your Business*

CONVENTIONS AND SHOWS CANCELLED.—The Office of Defense Transportation on December 17, 1942 urged cancellation of trade shows and sales meetings involving intercity transportation, as part of the general program to conserve transportation for more essential war purposes.

ODT officials declared that the statement issued December 15 by Joseph B. Eastman, Director of Defense Transportation, calling for abandonment of meetings and conventions not contributing in an important way to the winning of the war, applied equally to sales gatherings and trade shows. They pointed out that such events not only taxed passenger facilities of public carriers but often required baggage, express or freight service in the transportation of exhibit materials. Passenger, express, and baggage facilities, the ODT reiterated, are being subjected to severe strain by the demands of war and essential civilian traffic, and should not be asked to bear the added burden imposed by trade shows and sales meetings.

In compliance with this request, the National Crushed Stone Association has cancelled its twenty-sixth annual convention which was to have been held in Cleveland, January 26 to 28.

FLUORSPAR CONSUMPTION REDUCED.—The fluorspar section and the steel division of WPB announced, as a result of a meeting held in Washington, a voluntary conservation program to reduce the consumption of fluorspar by steel producers 10 to 15 per cent. This action was taken in an effort to avoid an expected shortage of approximately 50,000 tons of metallurgical-grade fluorspar in 1943. At the same time the section announced its current program through which substantial tonnage of new fluorspar will be added to the U. S. supply through increased production and imports from near countries. Fluorspar is absolutely essential in making steel, aluminum, and refrigerants, and is important in making 100-octane gasoline. Shipments of all grades from mines to consumers in 1941 were 320,000 tons, an increase of 80,000 tons over 1940. In 1943 the requirements for all grades are expected to be close to 500,000 tons.

LIME REQUIRED BY CARBIDE MAKERS.—Requirements of carbide companies for lime were discussed at the initial meeting of the Lime Industry Advisory Committee, held in Washington on November 23, 1942 with representatives of the War Production Board. After careful consideration of the cost factor and of transportation of materials needed for the production of lime, the committee agreed that in its opinion sufficient physical facilities are available within the industry at present to supply the tonnage of lime required by the two carbide companies now constructing plants at Ashtabula, Ohio. This suggestion was made in preference to one which called for construction of a plant for lime production at the point of consumption in order to save critical materials and labor.

The nation-wide production of lime also was reviewed by the committee. With the exception of the Pacific northwest, members agreed that the present production in most areas is sufficient, but recommended unanimously that a survey be made of present producing facilities in anticipation of possible future demands.

The committee consists of the following: Reed C. Bye, vice-president, Warner Company, Philadelphia; Ralph L. Dickey, president, Kelley Island Lime & Transport Company, Cleveland; John R. Durrell, president, Hoosac Valley Lime Company, Inc., Adams, Massachusetts; Eric Johnston of Washington, D. C., president, Washington Brick & Lime Company, Spokane, Washington; Warren Lewis, vice-president, Longview-Saginaw Lime Works, Birmingham, Alabama; H. B. Mathews, Jr., president, Mississippi Lime Company, Alton, Illinois; Bernard L. McNulty, president, Marblehead Lime Company, Chicago; Amos B. Miner, sales manager, National Gypsum Company, Buffalo, New York; W. W. Sprague, vice-president, National Mortar & Supply Company, Pittsburgh, Pennsylvania; and E. I. Williams, president, Riverton Lime Company, Riverton, Virginia.

FOR recovering suspended materials from gases, no other mechanical collector can match the advantages of the MULTICLONE. It is the result of over 36 years of concentrated research and development in the science of recovery and incorporates many exclusive advancements that reduce installation costs, increase operating efficiency, save valuable space and greatly simplify maintenance and inspection.

FOR EXAMPLE . . . *the patented vane design of MULTICLONE tubes eliminates need for the complicated manifolding and costly multiple ducts of conventional side-entry cyclones. This important advancement permits any number of tubes to be compactly installed in small areas,* **using only ONE inlet and ONE outlet header.** *In addition, the particles removed by an entire bank of tubes are collected through* **one** *unitized hopper, further simplifying installation and operation over the conventional multiple hopper arrangement.*

Advantages are many. The smaller surface exposed to the gas minimizes erosive wear, and because all tubes can be quickly reached through a single manhole, maintenance is easy and quick without dismantling entire unit. • Heat radiation is reduced to a minimum by the simplified header construction, improving temperature control and reducing costs of insulation. • The great saving of space permits MULTICLONE installation in existing structures where manifolding would be impossible—and in all new structures where space is valuable.

These are only a few of the *many* engineered advantages that are yours when you install a MULTICLONE. It will pay you to get the full story before you install *any* dust recovery equipment!

SEND FOR BULLETIN containing detailed information and specifications on MULTICLONE construction.

WESTERN Precipitation CORPORATION

Engineers, Designers and Manufacturers of Equipment for Collection of Suspended Materials from Gases and Liquids

Main Offices: 1017 West Ninth Street • Los Angeles, Calif.
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PRECIPITATION COMPANY OF CANADA, LTD. • DOMINION SQUARE BUILDING, MONTREAL

MINING BRANCH DIRECTOR.—Arthur S. Knoizen has been appointed director of the Mining Equipment Division (formerly Mining Division), succeeding Dr. Wilbur A. Nelson, who has been assigned to staff duties in the office of the Director General for Operations. The functions of the Mining Equipment Division are identical with those of the former Mining Division, except that it will not deal with the problem of the taxation of mines.

TRANSPORTATION-OF-PROPERTY TAX.—In an attempt to answer some of the questions that have arisen with regard to the application of the federal tax on the transportation of property in the lime industry, the National Lime Association, through its secretary, W. Vernon Brumbaugh, has just issued the following statement to its members:

Referring to OPA Supplementary Order No. 31—Tax on Transportation of Property Imposed by Revenue Act of 1942—there has been some confusion as to the application of the order in the lime industry.

The interpretation 1305-36 (a) deals with the treatment of the tax "for purposes of determining the applicable maximum price of any commodity," and provides that, "It shall not be treated, under *any provision of any price regulation* or any interpetation thereof, as a tax for which a charge may be made *in addition to the maximum price.*" What this means is that the tax may not be charged to the customer if it becomes an addition to the maximum price permitted under existing OPA regulations.

The confusion arises from the improper interpretation of the expression "delivered price," as it is used in the lime industry. There are few, if any, delivered prices in the lime industry in the sense that the expression is used in the sale of most commodities.

Lime Sold on an F. O. B. Plant Basis

Lime is priced and sold generally on an f. o. b. plant basis. *If the seller sold f. o. b. plant in March, 1942, increases in outbound transportation costs (including the 3 per cent. tax) can, of course, be passed on to the purchaser.*

Lime Sold on "Delivered Price" for Convenience of Seller or Purchaser

In some instances, for the convenience of the seller or purchaser, lime is priced and/or sold on a delivered-price basis. *If the seller sold on a delivered price basis in March but his price was computed on the basis of an f. o. b. plant price, adjusted for the actual cost of making delivery to each individual customer, the seller may pass on increases in outbound transportaion costs.* However, this method of computing the March delivered price must have been objectively established to purchasers, as where the sellers offered both a delivered and f.o.b. price, the difference being the transportation costs; or where the seller quoted or billed transportation costs separately; or where the delivered price varied in each locality precisely by the difference in costs of transportation to the several localities.

Lime Sold on "Delivered Price" to Meet Competition

In other instances, to meet competition, lime is also priced and/or sold on a delivered price basis. *If the seller sold on a delivered price basis in March but his price was computed on the basis of an f.o.b. plant price, adjusted for the competitive cost of making delivery to each individual customer, the seller may pass on increases only on the actual competitive transportation costs used to compute the delivered price.*

In other words, the seller must absorb the transportation tax on the difference in transportation costs between the actual and the competitive rates, for example:

50 tons lime @ $8.00 per ton..$400.00
Actual freight rate, $2.00 per ton. 100.00
Competitive freight rate, $1.50 per ton 75.00
Difference in freight rates..... 25.00

Tax to be absorbed by shipper would amount to 3 per cent. on the difference in freight rates, or 75 cents.

WAGE AND SALARY ADJUSTMENTS.—In order to help the Bureau of Internal Revenue and the National War Labor Board in their effort to decentralize their wage and salary adjustment activities, employers are urged to present their applications for wage or salary adjustments, in those cases where government approval is required, to the proper regional office of the proper body.

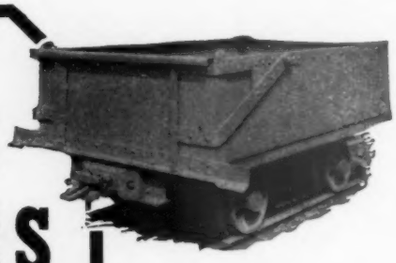
1. The National War Labor Board has been given control (a) over all wage adjustments and (b) over all salaries under $5,000 annually paid to all employees except managerial, administrative and professional employees who are not represented by a certified union. A list of NWLB Wage and Hour Division regional offices and branches is given in Table I. [See page 113].

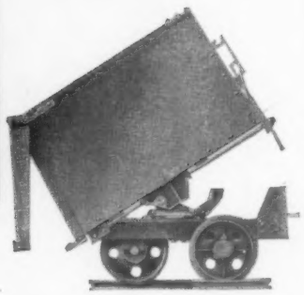
2. The Bureau of Internal Revenue has been given control over all salary adjustments except those mentioned above as being under the control of the NWLB.

QUICK-ACTING, STRONG, DURABLE

PSC CARS

ARE DOING THEIR JOB FAITHFULLY & CONTINUOUSLY IN MINING Everywhere!





AUTOMATIC AIR DUMP CAR

Provides rapid discharge of load, free from excessive shock to car or track. Capacities from 12 to 50 cubic yards, and load carrying capacities up to 90 tons. (50-yard car illustrated)

● No need for frequent time-outs to overhaul when you're using rugged, dependable **PSC** Cars. Every one of these high capacity cars is engineered for today's accelerated war-time production.

Keep the facts on the **PSC** line in your files by writing for our informative bulletins.

PRESSED STEEL CAR

PRESSED STEEL CAR COMPANY, INC.
(INDUSTRIAL DIVISION)
PITTSBURGH, PA.

Table II, appearing on page 114, lists the district offices of the bureau.

TABLE I.—WAGE AND HOUR DIVISION —REGIONAL OFFICES AND BRANCHES

Region 1—Maine, Massachusetts, New Hampshire, Rhode Island, Vermont—
Leo A. Gleason, *regional director*, 294 Washington St., Boston.

Region 2—Connecticut, New Jersey, New York—
Arthur J. White, *regional director*, 341 Ninth Avenue, New York.

New Jersey Branch—
Roland G. Chessman, *supervising inspector*, 31 Clinton St., Newark, N. J.

New York State Branch—
Frank J. Muench, *supervising inspector*, 621 State Tower Bldg., Syracuse, N. Y.

Region 3—Delaware, Pennsylvania, and Bancock, Brooke, Ohio and Marshall Counties of West Virginia—
Frank J. G. Dorsey, *regional director*, 1216 Widener Bldg., Philadelphia.

Pennsylvania Branch—
William S. Singley, *supervising inspector*, 219 Old Post Office Bldg., Pittsburgh.

Region 4—(Merged with Regions 2 and 3)

Region 5—Maryand, Virginia, West Virginia (expect counties named in Region 3)—
W. C. Cole, *regional director*, 215 Richmond Trust Bldg., Richmond, Va.

Maryland Branch—
Ernest L. Martin, *supervising inspector*, 201 N. Calvert St., Baltimore, Md.

Region 6—North Carolina—
Forrest H. Shuford, *commissioner*, North Carolina Department of Labor, Salisbury and Edenton Sts., Raleigh, N. C.

Region 7—Florida, Georgia, South Carolina—
Jerome R. McLeod, *regional director*, 249 Peachtree St., N. E., Atlanta, Ga.

Florida Branch—
Robert K. Miller, *supervising inspector*, New Post Office Bldg., Jacksonville, Fla.

South Carolina Branch—
M. O. Dantzler, *supervising inspector*, Federal Land Bank Bldg., Columbia, S. C.

Region 8—Alabama, Louisiana, Missippi—
Robert T. Amis, *regional director*, 1007 Comer Bldg., Birmingham, Ala.

Alabama Branch—
J. Sidney Gonsoulin, *acting supervising inspector*, 1908 Comer Bldg., Birmingham.

Louisiana Branch—
Mahlon Hale, *supervising inspector*, 916 Union Bldg., New Orleans, La.

Mississippi Branch—
Lynn L. Haydel, *supervising inspector*, 404 Deposit Guaranty Bank Bldg., Jackson, Miss.

Region 9—Kentucky, Tennessee—
William M. Eaves, *regional director*, 509 Medical Arts Bldg., Nashville, Tenn.

Region 10—Michigan, Ohio, and Boone, Campbell and Kenton Counties of Kentucky—
Grace G. Glascott, *regional director*, Main Post Office, Cleveland, O.

Michigan Branch—
Harry A. Reifin, *supervising inspector*, 1150 Griswold St., Detroit, Mich.

Ohio Branch—
Lucille D. Newton, *supervising inspector*, 1312 Traction Bldg., Cincinnati, O.

Region 11—Illinois, Indiana, Wisconsin—
Thomas D. O'Malley, *regional director*, 1200 Merchandise Mart, Chicago.

Region 12—Minnesota, Montana, North Dakota, South Dakota—
L. A. Hill, *regional director*, 730 Hennepin Ave., Minneapolis, Minn.

Region 13—Colorado, Iowa, Kansas, Missouri, Nebraska, Wyoming—
Walter W. King, *regional director*, 504 Title & Trust Bldg., Kansas City, Mo.

Colorado Branch—
Henry M. Roberts, *supervising inspector*, 300 Chamber of Commerce Bldg., Denver, Colo.

Missouri Branch—
Earl V. Powers, *supervising inspector*, 100 Old Federal Bldg., St. Louis, Mo.

Region 14—Arkansas, New Mexico, Oklahoma, Texas—
G. C. Street, Jr., *regional director*, 1100 Main St., Dallas, Tex.

Region 15—Arizona, California, Idaho, Nevada, Oregon, Utah, Washington—
Wesley O. Ash, *regional director*, 785 Market St., San Francisco.

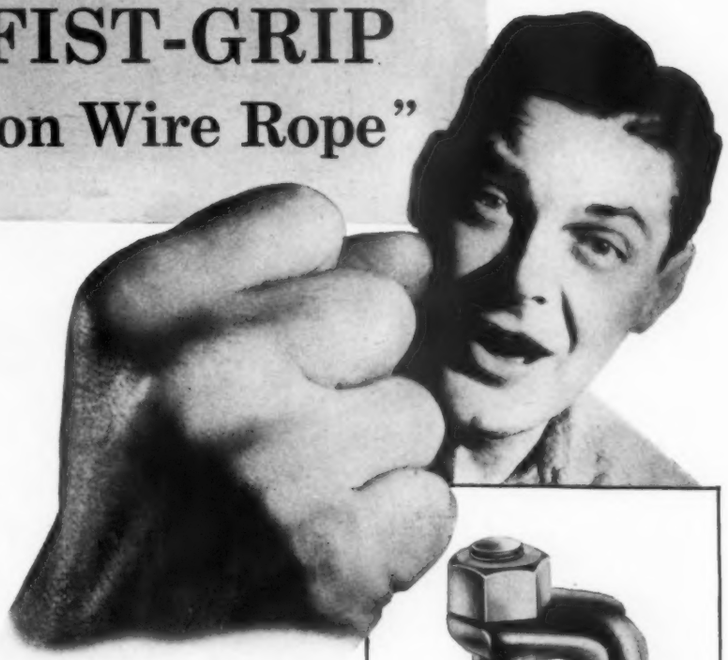
California Branch—
J. A. Stellern, *supervising inspector*, 417 H. W. Hellman Bldg., Los Angeles.

Hawaii Branch—
Howard E. Durham, *manager*, 345 Federal Bldg., Honolulu, T. H.

Oregon Branch—
Charles H. Elrey, *supervising inspector*, 208 Old U. S. Courthouse, Portland, Ore.

Washington Branch—
Walter T. Neubert, *supervising inspector*, 305 Post Office Bldg., Seattle, Wash.

"Save Bullet-Metal for Our Boys' Guns ... with a FIST-GRIP on Wire Rope"



"YOU can save rope, save clips — just as we do — by using Laughlin 'Fist-Grip' Safety Clips, instead of 'finger-pinch' U-bolt clips that crimp and injure wire rope.

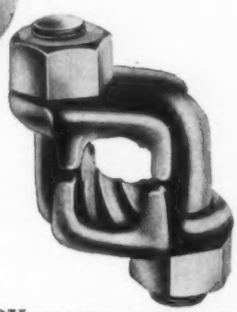
"With 'Fist-Grip' Clips the bolts are on opposite sides — the four bearing surfaces grip like a fist, not a 'finger-pinch'. Three 'Fist-Grip' Clips do the work of four U-bolts! Design is so strong that less steel is needed in each clip. *25% less steel* in all is saved per assembly.

"I figure the rope, clips and steel saved mean more guns and bullets for our boys."

Competitive Tests Prove Greater Holding Power of Laughlin "Fist-Grip" Clips

With 4 U-bolt clips at 37,750 lbs. load, ¾" rope broke at saddle, while only 3 Laughlin Safety Clips held the same load without rope breakage, because extra bearing surfaces grip without crimping. Here's the clip that fights for your country! Investigate!

★ ★ ★ ★



YOU can save manpower and metals with the "FIST-GRIP" CLIP

Saves Manpower
greater holding power, less work; can't be put on wrong.

Saves Metals
no special-shaped wrench, fewer clips needed, no spoiled rope, 25% less steel.

THE THOMAS LAUGHLIN Company
PORTLAND, MAINE

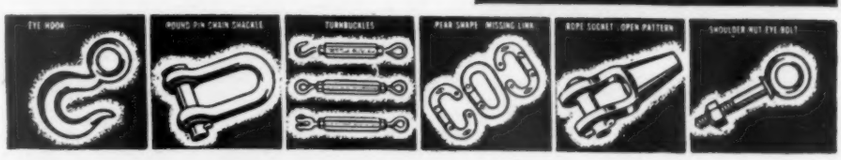


TABLE II.—BUREAU OF INTERNAL REVENUE—REGIONAL OFFICES

Alabama, Florida, Georgia, South Carolina, Tennesesee—
Carlos J. Lively, 717 William Oliver Bldg., Atlanta, Ga.

Arkansas, Louisiana, Mississippi, New Mexico, Oklahoma, Texas—
A. H. Hertwig, Tower Petroleum Bldg., Dallas, Tex.

Arizona and Sixth Collection District of California—
Hugh Ducker, 770 Subway Terminal Bldg., Los Angeles, Cal.

California (First Collection District), Nevada, Utah, Hawaii—
Milo Bean, 100 McAllister St., San Francisco, Cal.

Colorado, Iowa, Kansas, Missouri, Nebraska—
M. L. R. Wade, R. A. Long Bldg., Kansas City, Mo.

Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont—
Frank L. Daylor, 1 State St., Boston, Mass.

Delaware, District of Columbia, Maryland, North Carolina, Virginia, West Virginia—
(Regional officer not yet named. Write Bureau of Internal Revenue, Washington, D. C.)

Idaho, Montana, Oregon, Washington, Wyoming, Alaska—
Robert J. Service, 312 Smith Power Annex, Seattle, Wash.

Illinois, Indiana, Minnesota, North Dakota, South Dakota, Wisconsin—
Porter Linder, 208 S. LaSalle St., Chicago.

Kentucky, Ohio—
Earle C. Ely, 215 Euclid Ave., Cleveland.

Michigan—
C. D. Leiter, Penobscot Bldg., Detroit.

New York and Fifth Internal Revenue Collection District of New Jersey—
Charles A. Drake, 253 Broadway, New York.

Pennsylvania and First Collection District of New Jersey—
Walter Perry, 1313 National Bank Bldg., Philadelphia.

REPLACE WITH

DEFENDER Bearing METAL

Lead-base Babbitt that Stands Shock Loads

This new malleable alloy is a service-proven substitute for Magnolia's famous Adamant Super-Genuine babbitt metal. Defender metal is tough . . . strong . . . withstands shock loads without cracking . . . takes the pounding in trap rock crushers, sifter machinery, agitators, internal combustion engines and other machines which put hammer-blow strains on bearings.

NEW DATA BOOK GIVES COMPLETE INFORMATION

A new bulletin giving full details on all Magnolia bearing metals will be sent on request. This 8 page, file size booklet gives complete specifications, lists applications and contains much helpful data which will assist you in getting longer and more satisfactory service from your bearings. Write for your copy today. A postcard will do.

MAGNOLIA METAL CO.
18 West Jersey St., Elizabeth, New Jersey

MAGNOLIA BEARING METALS

Increases in wages and salaries will be approved only in exceptional cases, the National War Labor Board announced on November 6 in issuing the policy under which it will administer that part of the economic stabilization program over which it has jurisdiction. The policy was adopted unanimously by the public, labor and industry members of the board. The policy states:

"The policy directive given the National War Labor Board by Congress and by the President is clear. Under that directive the board will act on the presumption that wage rates prevailing on September 15, 1942 are proper. The board will grant wage increases over the level prevailing on September 15, 1942, only in exceptional cases and in accordance with the following paragraph of Executive Order No. 9250 of October 3, 1942:

" 'The National War Labor Board shall not approve any increases in the wage rates prevailing on September 15, 1942, unless such increase is necessary to correct maladjustments or inequalities, to eliminate substandards of living, to correct gross inequities, or to aid in the effective prosecution of the war!' "

The policy further states that the Board will "examine carefully each claim for such exceptional treatment before approving any increase." In considering specific cases the Board will be guided by the general principles outlined in the policy which briefly are as follows:

1. *Maladjustments.*

"If a group of employees," the policy states, "has received increases amounting to 15 per cent. in its average straight-time rates over the level prevailing on January 1, 1942, the Board will not grant further increases as a correction for maladjustments. . . .

"To correct these maladjustments the Board will consider requests for general increases in straight-time rates up to 15 per cent. above the level prevailing on January 1, 1941. This policy sets a terminal point for general wage increases. It is not applicable to individual workers or to employees in particular job classifications. It will be applied only to groups composed of all the employees in a bargaining unit, in a plant, a company, or an industry, depending upon the circumstances of each case."

The WLB Regional Directors may adjust rates to correct such maladjustments only in cases arising in industries specifically designated by the Board. This list of industries will be announced by the Board in the next few days. Proposed wage adjustments in industries not so listed must be referred to the Board in Washington for action.

2. *Inequalities and Gross Inequities.*

"The wage rate inequalities," the policy states, "and the gross inequities which may require adjustment under the stabilization program are those which represent manifest injustices that arise from unusual and unreasonable differences in wage rates.

"Wage differentials which are established and stabilized are normal to American industry and will not be disturbed by the Board."

The Board itself will review all cases where increases are requested under this section. Such cases must go to the Regional Director for his approval first.

3. *Substandards of Living.*

"In the President's Message of April 27, 1942, and again in the Executive Order of October 3, 1942, the word "substandard" is used with reference to the need for eliminating substandards of living. The National War Labor Board has dealt with but a very few cases in which the substandard issue has been a factor. Therefore, the Board is not in a position at this time to enunciate a general policy to govern the adjustment of wages to eliminate substandards of living. The Board will not undertake to measure substandards of living by any fixed wage rate.

"Such cases involving substandards of living as may arise will be considered by the Board on their individual merits until sufficient experience has accumulated to permit the statement of a more general policy.

4. *Effective Prosecution of the War.*

Under Executive Order 9250, the National War Labor Board may approve any increase of the wage rates prevailing on September 15, 1942, if such an increase is necessary "to aid in the effective prosecution of the war." Every adjustment in September 15, 1942, wage levels that the Board may make will be, in its judgment, for a more effective prosecution of the war.

"The National War Labor Board will not approve wage increases for the purpose of influencing or directing the flow of manpower.

"When in a particular case management and labor, in cooperation with the War Manpower Commission and other government agencies, have taken concerted action to solve a manpower need, the Board will consider a request in that case to correct whatever inequalities or gross inequities may then need correction."

The Board announced on November 6 that a bonus, fee, gift, commission or other form of compensation customarily paid employees can be continued in the future without approval by the Board with two provisos:

(1) *If it is a fixed amount,* the total amount paid during the current bonus year must not exceed the total paid an employee for like work during the preceding bonus year.

(2) *If it is computed on a percentage, incentive or similar basis,* the rate and method of computation may not be changed during the current bonus year unless they yield no more than they did during the preceding year. The employee may receive a greater amount during the current bonus year only if the rate and method of computation are not changed in the current bonus year.

For instance, suppose an employee last year received a bonus of 5 per cent. on a salary of $2,500. This year his salary is $3,000. His employer can continue to pay him a 5 per cent. bonus on this year's salary without approval by the Board even though the amount of the bonus increased from $125 to $150.

This action came in the form of General Order No. 10, which was unanimously approved by the Board. This General Order covers only the compensations for those whose wages or salaries are under the jurisdiction of the Board. The Board has jurisdiction over all wages and over salaries under $5,000, except for supervisory or professional employees.

At the same time the Board issued amendments to General Orders No. 1 and No. 6, which have the effect of applying those orders to salaries over which the Board has jurisdiction. Originally these orders applied only to wage rates.

General Order No. 1 directs that all increases approved by the Board prior to October 3 should be put into effect. General Order No. 6 prohibits employers from paying employees more than the rate existing in the plant for that type of work without Board approval. If there are no established rates, as in the case of new plants, the rate fixed shall not be in excess of that which prevails for similar classifications within the area.

In Bulletin No. 1 the Board has answered the questions most often asked about the adjustment of wages and salaries by the National War Labor Board under the Executive Order. The Board has jurisdiction over the adjustment of all wages. This bulletin refers only to wages, and to the class of salaries over which the War Labor Board has jurisdiction.

Q. Does the Executive Order freeze wages and salaries?

A. No. But adjustments in wages can be made after October 3, and in salaries after October 27 only if approved by the National War Labor Board.

Q. Under what conditions will the War Labor Board approve increases?

A. To "correct maladjustments or inequalities, to eliminate substandards of living, to correct gross inequities, or to aid in the effective prosecution of the war."

Q. Are all employers covered by these requirements?

A. No, employers who have 8 or less workers may make increases without approval of the War Labor Board.

Q. Is an employer exempt if he has a number of establishments, each of which employs eight or less persons?

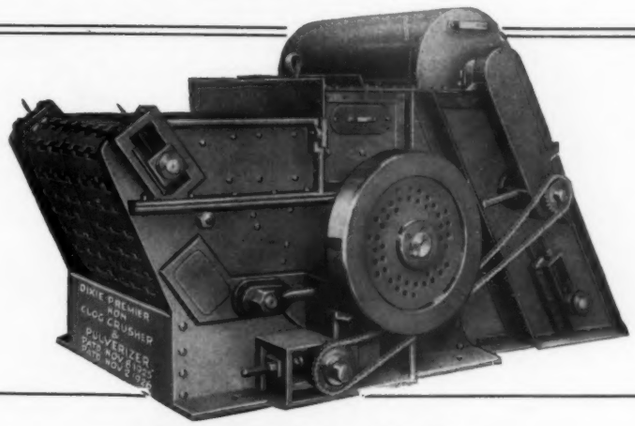
A. No. If the total number of persons in all of his establishments is more than eight, then he is not exempt.

Q. Can an employer grant individual wage or salary increases without WLB approval.

A. Yes, but only if the increases are in accordance with the terms of a wage or salary agreement or wage or salary rate schedules.

WHEN PRODUCTION CANNOT LAG

DIXIE GETS THE CALL!



DIXIE
Non-Clog
HAMMERMILLS

NOTE THESE TYPICAL TOUGH JOBS LICKED BY DIXIES

1. Replaced four crushers for high moisture content bauxite . . . cut power in half . . . reduced drying costs . . . increased production.
2. Efficiently crushing clay balls to reclaim phosphate in Florida phosphate plants.
3. Crushing phosphate muck in T.V.A. Tennessee plant.

HERE'S WHY

The Dixie Non-Clog Hammermill is the only crusher with a moving breaker plate. Provides positive mechanical feed. No manual pushing of material needed. Even the most plastic, wet, clayey material will not slow production or clog hammers. This feature alone has saved the cost of 10 men in one company!

And because the Dixie moving breaker plate can be adjusted forward or backward from the hammer points, quality and size of production can be controlled. This feature also provides additional assurance against clogging.

These are but two of Dixie's outstanding features. Send coupon below for free booklet, "More Efficient Crushing of Raw Materials" which gives complete facts.

DIXIE MACHINERY MFG. CO.
4202 Goodfellow Blvd., St. Louis, Mo.

GET THE FACTS!

DIXIE MACHINERY MFG. CO.
4202 Goodfellow Blvd., St. Louis, Mo.
Please send free booklet on Dixie Non-Clog Hammermills. We want to crush .....

Name .....

Company .....

Address .....

City ..... State .....

Even then, these increases can not be granted unless they are the result of one of the following:

(1) Individual promotions or reclassifications.

(2) Individual merit increases within established rate ranges.

(3) Operation of an established plan of wage or salary increases based on length of service.

(4) Increased productivity under piece-work or incentive plans.

(5) Operation of an apprentice or trainee system.

Q. Can an employer allow these individual increases to raise his costs and cause his prices to go up?

A. No. No employer will be allowed by the Government to use these increases either to get a price increase or to resist an otherwise justifiable reduction in his price ceiling.

Q. What about piece rates? Suppose an employer set a piece rate before or after October 3 which, when tried out in practice, did not give the employees the normal earnings prevailing in that plant for that type of job. Can he adjust this rate so as to yield the normal and expected amount?

A. Yes.

Q. The Executive Order of October 3 states that there shall be "no increases in wage rates" unless they are approved by the WLB. Can an employer get around this by hiring a new worker at higher wages than he is paying his present employees?

A. No, he can not hire a new worker at more than the established rate in the plant for the job.

Q. What about new jobs or new plants, where there are no established wage rates?

A. In such a case, the employer cannot, without WLB approval, pay more than the wage rates prevailing for similar jobs in the area.

Q. What about increases in wage rates granted before October 3?

A. Unless the WLB later decides to review them, all wage increases put into effect on or before October 3 do not need WLB approval. Such increases must have been agreed to in writing or formally communicated to the employes on or before October 3. They must also have been made applicable to work done prior to October 3.

Q. Let's take a specific case. A manufacturer made a written agreement with the union in his plant on October 3 for an increase of 4c an hour for his employees, retroactive to September 20. Does he have to have this increase approved by the WLB before putting it in his workers' pay envelopes?

A. No.

Q. But suppose, in the case just put, the workers didn't actually get the check till the next pay-day, say October 10?

A. The increase does not have to be approved. The men started earning the money, and the increase was in effect, on October 3.

Q. What about increases in wage rates which were agreed to before October 3, but which do not go into effect until some future date? Do they need WLB approval?

A. Yes, if they are payment for work done after October 3. The typical case is that of a contract made before October 3 providing that at some future date the workers will be granted an automatic increase tied to the increase in the cost of living which has occurred in the meantime. Such future increases must be approved by the WLB. This is also true of arbitration awards handed down after October 3, even if the agreement to arbitrate was made before that date.

Q. What about salary increases? After what date do they need WLB approval?

A. Increases in salaries after October 27 must be approved by the WLB unless otherwise exempted.

Q. Are the exemptions in the case of salaries the same as in the case of wages?

A. Yes.

Q. Does an employer who is not engaged in war production have to submit wage and salary increases to the WLB for approval?

A. Yes. There is no distinction made in the Executive Order between war work and non-war work.

Q. What about municipal, state, or federal government employees?

A. Wage and salary increases for all government employees are subject to regulation under the Executive Order of October 3 unless the amount of such salary or wages is fixed by statute.

Q. If wage or salary increases are made in the form of war bonds or stamps, do these increases need to be approved by the WLB?

A. Yes. It makes no difference whether the increases are granted in cash or in war bonds or stamps or any form of remuneration whatsoever.

Q. What is the difference between wages and salaries?

A. The term "salary" means all forms of compensation computed on a weekly, monthly, annual or other comparable basis, except a wage basis. The term "wages" means all forms of compensation computed on an hourly, daily, piece-work or other comparable basis.

Q. Are bonuses, gifts, loans, fees and commissions, when given as compensation for personal services, included in wages and salaries?

A. Yes.

Q. Can wages or salaries be decreased?

A. No decreases in wages or salaries for any particular work may be made below the highest rate paid for this work between January 1 and September 15, 1942 without approval by WLB.

Q. On what basis can the WLB approve such decreases?

A. Only to correct gross inequities and to aid in the effective prosecution of the war.

Q. What are the penalties for violations?

A. If any wage or salary payment is made in violation of the regulations, the entire amount of the payment shall be disregarded by all agencies of the government in determining the costs or expenses of any employer for the purpose of any law or regulation, including the Emergency Price Control Act of 1942, or any maximum price regulation thereof. The amount will also be disregarded for the purpose of calculating deductions under the revenue laws of the United States, or for the purpose of determining costs or expenses of any contract made by or on behalf of the United States. The amount to be disregarded in the case of increases in violation of the regulations is the amount of the wage or salary paid or accrued and not merely the amount of the increase.

Q. If an employer, for example, increased the wages of all his workers 5 cents an hour without approval by the WLB, would he be able to deduct any of the wages of those workers when he calculates the amount of his income tax?

A. No.

Q. Are there any further penalties?

A. Yes, any person or corporation who wilfully violates any of the regulations is subject to a fine of up to $1,000 or a year in jail, or both.

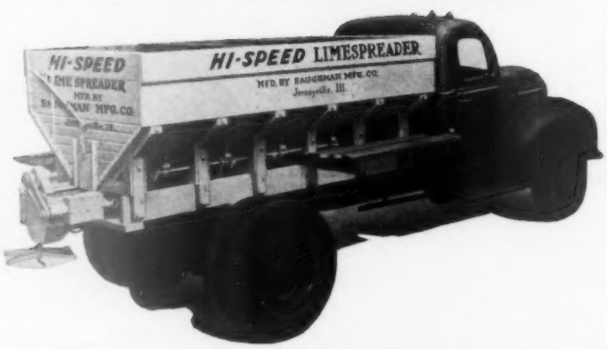
WELDING RODS RELEASED.— The limited control of the distribution of welding rods and electrodes effected by General Limitation Order L-146 was abandoned on the issuance December 9 of a revocation of L-146.

When intended purchasers of welding rods and electrodes for maintenance and repair work find it necessary to obtain preference ratings, applications for purchases of less than $50 should be addressed to local offices of the War Production Board. Where more than $50 worth of material is wanted, the applicant should obtain approval from the Director General for Operations in Washington.

The **TIME** . . . 1943 must grow more food

The **PLACE** . . . every farm in the U.S.A.

★ *The* **MACHINE** ★



★ **BAUGHMAN *Hi-Speed* LIME SPREADER** ★

FIELDS . . . FERTILITY . . . FOOD . . . increased farm production is our first need for 1943.

We'll require vast quantities of agstone to maintain the fertility and chemical balance of vital food-growing areas.

BAUGHMAN Spreaders—such as the Chain Conveyor Type Hi-Speed Limespreader—are preferred to insure the fast, uniform and economical distribution of agstone.

You need our booklet describing BAUGHMAN Spreading Equipment.

BAUGHMAN MANUFACTURING CO. **Jerseyville, Illinois**

Recent Patents

Clam-shell bucket. Elmer J. Scheib, Cabot, Pennsylvania, assignor to Blaw-Knox Company No. 2,299,255.

Dustless rock drill. Ernest H. Dickenson, New York City, assignor to Ingersoll Rand Company. No. 2,302,010.

Material-breaking implement. Thomas M. Stephens, Michigan City, Indiana, assignor to Sullivan Machinery Company. No. 2,302,069.

Mining machine. James F. Tracy, Pomeroy, Ohio. No. 2,302,073.

Shaker screen. Stanley B. Davies, Kingston, Pennsylvania, assignor to Rover Foundry & Machine Company. No. 2,302,193

Carrying scraper. John J. Low, Los Angeles, assignor to Kay-Brunner Steel Products, Inc. No. 2,302,335.

Stockholders of the Crocker-Wheeler Electric Manufacturing Company have approved the sale of the company to the Johsua Hendy Iron Works of Sunnyvale, California, in which Henry J. Kaiser, head of the Permanente Corporation, has an interest.

PERSONAL MENTION

JAMES MCKEE, formerly employed by the Superior Stone Company, Raleigh, North Carolina has been commissioned a lieutenant in the U. S. Army and is stationed at Camp Bickett, Virginia. R. A. SHUPING and WILLIAM G. ROSS, former employees of the Superior Stone Company, are now both corporals in the U. S. Army. Corporal Shuping has been assigned to the 66th Armored Regiment, serving overseas, and Corporal Ross is at present stationed at Fort Bragg, North Carolina.

John P. Courtright.

JOHN P. COURTRIGHT has been made vice-president in charge of sales of the Marion Steam Shovel Company. Until now, and since a year ago, he has been director of sales. Mr. Courtright's sales experience with the company dates back to 1927, when he became a salesman for the company in the Chicago district.

L. T. MCCOURT, who has been with the Fischer Lime & Cement Company at Memphis since 1919 has been elected president of the company to succeed the late W. W. Fischer. W. N. FRY, JR., and W. S. WALTERS have been elected vice-presidents and EUGENIE HATFIELD has been re-elected secretary and treasurer. John D. Moran will contine as general sales manager. All the new officers have been with the company for a number of years. They also hold the same positions with the Concrete Products Corporation at Memphis and the Greenville Sand & Gravel Company at Greenville, Mississippi, subsidiaries of the Fischer Lime & Cement Company.

PAUL J. NEWTON, formerly Chief, Excavating and Grading Section, Construction Machinery Branch, War Production Board, Washington, D. C., has been elected treasurer of Hertzler & Zook Company, Belleville, Pennsylvania, an affiliate of the New Holland Machine Company, manufacturers of rock-crushing and screening machinery.

For 32 Years, Amsco Has Kept Pace with Changing Dipper Requirements

There have been sweeping changes in the dipper needs of power shovel builders and users since Amsco brought out the Missabe type manganese steel dipper back in 1910. Higher digging speeds, larger loads and less time out for repairs were among the user demands, to all of which Amsco bucket design has responded effectively.

The Amsco Missabe Dipper was an acknowledged advance over any previously built and it is still popular with operators in coal stripping, harbor dredging and in the Iron Range from which it got its name. This dipper's body has a front and back casting securely riveted together through overlapping sections. Bail brackets are on the front casting and are placed at an angle conforming to the line of bail pull so that shearing of rivets and pulling apart of front and back are virtually impossible.

In 1930, Amsco developed the first true renewable lip dipper, with the patented U-bolt fastening, interlocking joint design. This allowed lips to be changed in minutes instead of hours.

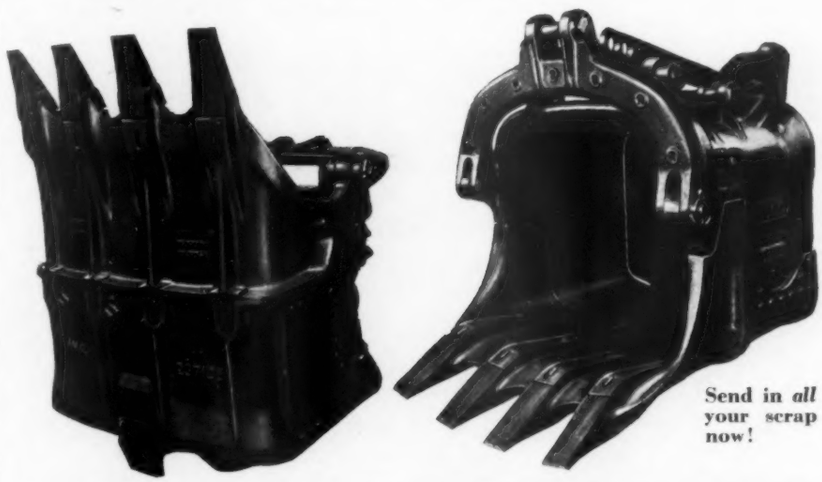
Since 1930, the Amsco lip design has evolved from the original blunt box shape to the present extended, rounded contour, sharp-edged lip with fanned teeth. The lips are carried further up the sides of the back casting, shortening the U-bolt and enabling teeth and lips to withstand heavier stresses. Reduced overall weight, smoother interior and a double taper outwardly, from top to door, assure faster and maximum loading as well as faster, cleaner dumping.

In 1938, Amsco introduced an improved dipper of two-piece body design with the same rivetless renewable lip, permitting replacement not only of the lip, but the riveted-on front when it finally became worn.

Amsco Renewable Lip Dippers have helped the upbuilding of America, and have provided greater profit for users by substantially lowering their digging and handling costs. Their metal-conserving features are currently benefitting the war effort.

Amsco Renewable Lip Dippers (U. S. Patent 1,945,064) are made in all sizes from ¾ yard capacity, with bail and back lugs arranged for any type of dipper stick. Buckets smaller than ¾ yard are usually a one-piece type without renewable lip.

Ask for Bulletin 641-D, explaining the advantages of genuine manganese steel, and picturing all types and sizes of Amsco dippers, dipper parts and teeth.



Send in *all* your scrap now!

Amsco

AMERICAN MANGANESE STEEL DIVISION
Chicago Heights, Illinois

THE AMERICAN Brake Shoe AND FOUNDRY COMPANY

FOUNDRIES AT CHICAGO HEIGHTS, ILL.; NEW CASTLE, DEL.; DENVER, COLO.; OAKLAND, CALIF.; LOS ANGELES, CALIF.; ST LOUIS, MO.
OFFICES IN PRINCIPAL CITIES

B. C. HEACOCK, chairman of the executive committee of the Caterpillar Tractor Company, has been named director of the Priorities Control Division of the Distribution Bureau, WPB. Mr. Heacock's division is charged with the responsibility of integrating the Production Requirements Plan, and the priorities system as a whole, with the Controlled Materials Plan; implementing determinations of the Requirements Committee; processing applications for special and emergency ratings; and clearance of War Production Board orders.

RAY S. HUEY, superintendent of the Universal Atlas Cement Company at Duluth, has retired after serving in that capacity since the plant started operation in 1916. He will be succeeded by FRED ROBINSON, who has been assistant superintendent.

WILLIAM C. CARTER, for fourteen years vice-president and for the past year executive vice-president, has been elected president of the Link-Belt Company, effective December 31, to succeed ALFRED KAUFFMANN, who resigned because of ill health.

B. P. Spann.

B. P. SPANN, for the past eight years, advertising manager of the Gardner-Denver Company, Quincy, Illinois, has received his commission as lieutenant, junior grade, in the Supply Corps of the U. S. Naval Reserve, and is now stationed in Philadelphia. On leave of absence from the Gardner-Denver Company, Lieutenant Spann will resume his duties as advertising manager after the war.

T. D. DAVIS, who has been serving on the west coast as service engineer for the crusher division, has been elevated to the position of district representative for the Pacific Coast territory by the Nordberg Manufacturing Company.

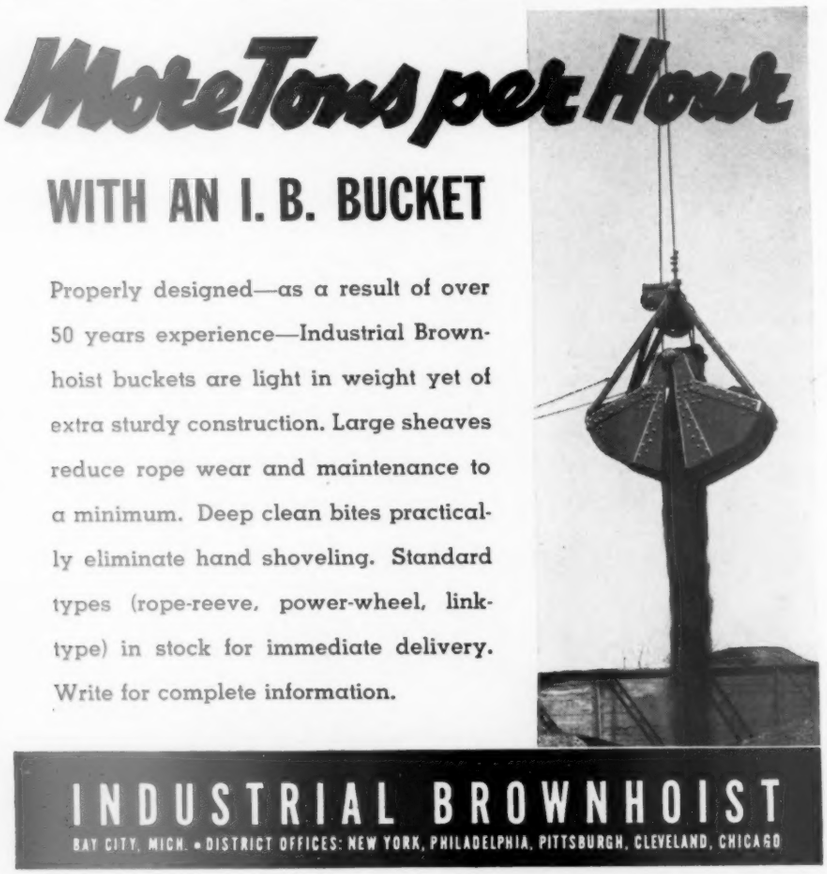
GERARD SWOPE, president of the General Electric Company, has been selected as the sixth recipient of the Hoover Medal. The medal will be presented to Mr. Swope during the winter convention of the American Institute of Electrical Engineers during the week of January 25, 1943.

DONALD SHENK, JR., associated with his father in the Donald Shenk Gravel Company at Durand, Michigan was married recently to Miss Arloa Mae Maurer of Owosso, Michigan. They have now returned home after a honeymoon spent in the Smoky Mountains.

GLENN W. STANCLIFF, chief engineer of the Waco, Texas, plant of the Universal Atlas Cement Company has been appointed assistant superintendent of the Leeds, Alabama plant.

A. J. CAYIA, superintendent of the Inland Lime & Stone Company, Manistique, Michigan, has been named chairman of the Schoolcraft County Civilian Defense Council.

J. H. KEMPSTER, general superintendent of the Buffington, Indiana plant, of the Universal Atlas Cement Company, is retiring after more than 35 years of service with the company. J. B. LEWIS, formerly assistant general superintendent, is appointed plant manager and A. E. FREUDENREICH, general operating foreman, is promoted to assistant plant manager.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JOHN J. WRIGHT of the Massachusetts Bonding & Insurance Company, Boston, has been appointed an alternate member of the Sectional Committee on Safety in Quarry Operations of the American Standards Association. The committee is in charge of safety provisions for quarry, open-pit and strip mining operations.

JOSEPH FRUTCHEY, 70, treasurer of the Cass City Sand & Gravel Company, Cass City, Michigan, passed away in December.

JOHN T. HEFFERNAN, JR., vice-president and general manager of the Glacier Gravel Company, Seattle, died December 12 after a brief illness at the age of 43. He had spent his entire business career with the firm of which his father, who survives, is president.

THOMAS M. SMILEY, JR., 82, head of the Smiley Sand & Gravel Company, Atlanta, passed away a few weeks ago. He was a native of Shelby, Tennessee and entered the sand-and-gravel business in 1907 at Rome, Georgia.

A. E. FIELDING, president of the Screen Equipment Corporation, Buffalo, passed away suddenly early in December.

V. D. HAWKINS, 62, for thirty years a cement salesman at Wichita, Topeka, and Lawrence, Kansas, died November 30 of a heart attack at the home of his sister, at Kirksville, Missouri. He had lived at Cameron, Missouri, with a brother before going to Kirksville to spend the winter. Burial was a Gallatin, Missouri.

H. ARTHUR TEWELL, plant superintendent at Covington, Indiana for the Neal Gravel Company died recently of a heart ailment at his home in Palestine, Illinois. He had been affiliated with the company as its plant superintendent for more than 20 years.

EMORY L. FORD, 66, vice-president of the Huron Portland Cement Company, Detroit, died December 20. In addition to his position with the cement company, he was president of the Michigan Alkali Company and the J. B. Ford Company. He was one of the founders of the Detroit Community Fund and during the first World War was director of shipping for the Red Cross. A native of New Albany, Indiana, Mr. Ford had lived in suburban Wyandotte since his graduation from Princeton University in 1896.

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CENTRIFUGAL PUMPS

OCCUPATIONAL DISEASES and the LAW

Removal of Dust Hazard

Ligiecki v. E. I. du Pont de Nemours & Company, Inc., decided by the U. S. District Court, Western District of New York, July 9, 1942; reported at 46 Fed. Supp. 266.

The plaintiff worked for the defendant for a period commencing in June, 1933, and ending in April, 1941. This is an action to recover damages for personal injuries allegedly caused by the harmful dust and vapors in the atmosphere of the plant. It was begun by the service of a summons and complaint on July 28, 1941; it was alleged, among other things, that the injuries were not accidential in nature and were "not such injuries of diseases as were at the time of the happening thereof within the purview of the Workmen's Compensation Act of the State of New York."

The defendant moved for a summary judgment on the grounds that the court lacked jurisdiction, and that the action was barred by the 6-year statute of limitations applicable to an action at common law and by the 90-day limitation created by Chapter 548 of the Laws of New York of 1940, amending Section 66 of the Workmen's Compensation Law. Subsequently the plaintiff moved to amend his complaint, alleging that the plaintiff was exposed to "no hazard of any nature after July, 1935," and that Section 66 of the Workmen's Compensation Law, as amended by Chapter 548 of the Laws of 1940, is unconstitutional.

Prior to September 1, 1935 sufferers from silicosis and other dust diseases had only their common-law remedy. Subsequent to that date the Workmen's Compensation Law provided for compensation, except in cases where the last injurious exposure occurred prior to that date, thus in these latter cases preserving the common-law remedy. The compensation relief was afforded under Section 3, subdivision 2, until the addition of Article 4-A. Even after the addition of Article 4-A, the common-law remedy remained as to cases where the last injurious exposure occurred prior to September 1, 1935. However, by the amendment to Section 66 by Chapter 548 of the Laws of 1940, the time to commence these common-law actions was limited to 90 days from April 16, 1940. The amendment limits the time to begin an action "in any case in which there was an *injurious* exposure to the hazards of the disease prior to, and *any* exposure to such hazards subsequent to, September 1, 1935." The generation of harmful dust and vapors, says the court, "creates a hazard present in this industry not common to all other industries. The use of effective means of removal of these dusts and vapors may remove the risk of injury from them to a large extent but, since the generation of the dusts and vapors continues, the hazards remain. The amendment to Section 66, therefore, is directed to cases where effective means of removal of dusts and vapors or prevention of injury therefrom are alleged to have been employed prior to or by September 1, 1935."

The court holds that since the plaintiff alleges merely that subsequent to September 1, 1935, effective means of removal of harmful

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dust and vapors were employed by the defendant and not that the generation of dusts and vapors was eliminated, he, in effect, pleads that the hazard is still present, and his proposed amendment "that plaintiff was exposed to no hazard after July, 1935," is contradictory and of no effect.

The amendment to Section 66 by Chapter 548, Laws of 1940, is held to be constitutional, and the plaintiff was not thereby deprived of any common-law right of action. "While it is true the legislature would have been powerless to take away the common-law right of remedy and provide no relief, here it not only substituted relief as provided by the Workmen's Compensation Law, but a reasonable period of limitation was fixed in which to bring the common-law action."

In the proposed amended complaint the plaintiff pleaded a partial disability. The court holds that regardless of whether Article 4-A is constitutional as depriving plaintiffs of causes of action for partial disability, "still it is constitutional in so far as it bars common-law action arising before September 1, 1935, unless begun within 90 days from April 16, 1940."

The motion to amend the complaint with respect to partial disability is granted, otherwise denied, and the motion for summary judgment is granted.

Exposure to Dust

Ferguson & Lange Foundries, Inc. et al. v. Industrial Commission et al., decided by the Supreme Court of Illinois, June 11, 1942; modified on denial of rehearing, September 23, 1942; reported at 43 N.E. (2d) 684.

The employee concerned claimed and was awarded compensation for disablement claimed to have been caused by silicosis to which he was last exposed while in the employment of the company named. The Circuit Court of Cook County set aside the award and found that it was against the manifest weight of the evidence, and that the claimant had failed to establish that he had sustained an occupational disease and a disablement arising out of and in the course of his employment, within the contemplation of the Illinois Workmen's Occupational Diseases Act. That decision is affirmed in this appeal.

"It is, of course, true," says the Supreme Court, "that plaintiff in error (the workman) is conclusively deemed to have been exposed to an occupational disease during the 61 days he was employed (in a foundry). Proof of exposure, alone, is not, however sufficient to sustain an award of compensation. An employee seeking compensation must show not only that he contracted an occupational disease while so exposed but also that he was disabled from earning full wages at the work in which he was last exposed. The second condition is not present because during the whole time he worked for Ferguson & Lange, as well as when he worked later in another foundry, he earned full wages. There is nothing to show that he was disabled from working full time as a coremaker but only a showing that he might become disabled had he continued such work. This falls short of the requirement of the statute. Plaintiff in error was not released by Ferguson & Lange because he was disabled nor because he had silicosis. The facts disclosed that he was discharged because of the danger that might arise to him by reason of the occupation and the effect it might have on his predisposition to tuberculosis. . . . Construing the evidence most favorably to plaintiff in error, it is perfectly plain that the affliction of which he complains, whether or not compensable

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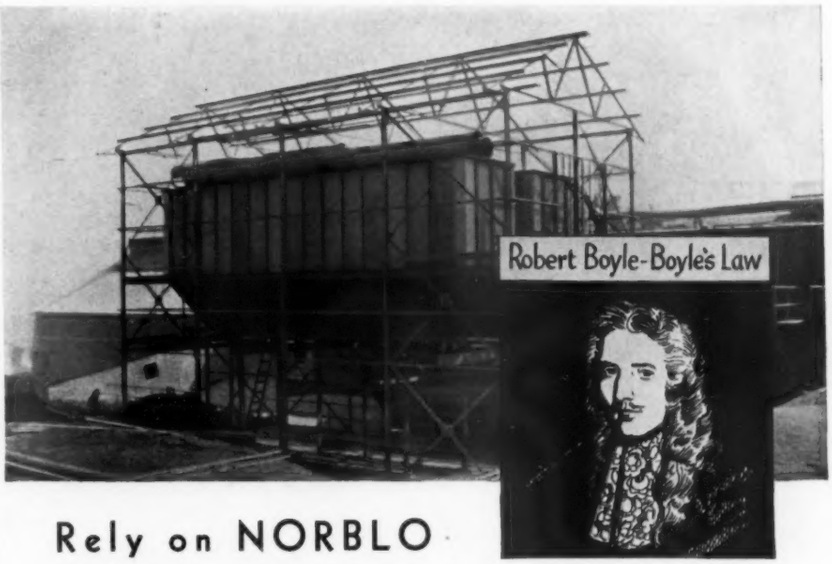

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as tuberculosis (*Stewart - Warner Corporation v. Industrial Commission,* 376 Ill. 141, 33 N.E. (2d) 196), or otherwise neither had its inception in nor is fairly traceable to the hazards of his employment during the sixty-one days' exposure as an employee of defendant in error."

Silicosis from Shoveling Sand

Sadowski v. Long Island Railroad Company, decided by the New York Supreme Court, Trial Term, Queens County, September 12, 1942; reported at 37 N. Y. S. (2d) 457.

The plaintiff recovered a $10,000 verdict under the Federal Employers' Liability Act, which gives a right of action against an interstate-commerce railroad to an employee "suffering injury" through negligence of the employer. The complaint stated a cause of action claiming that the bodily condition of the plaintiff was caused by sand dust inhaled during his work, and was an "injury" within the meaning of the statute. The plaintiff was employed for over fifteen years in one occupation, which included, according to the complaint, the shoveling of sand sufficiently fine to cause dust from it to arise and be inhaled and give him the condition in his lungs known as silicosis. The negligence alleged was that there were no mechanical devices for blowing the dust away or otherwise keeping it from him, and he was not furnished with any device to prevent inhaling the dust.

The court points out in reviewing the evidence that there was no evidence that any of the men working with the plaintiff had been affected, that during fifteen years he never complained of the dust or its effect on him, and that there was no proof that the method used was different from that in force on other railroads, or that elsewhere the men doing the same kind of work were provided with any device to prevent inhaling dust. "It is hard, therefore, to see how the conduct of this defendant could be said to fall below the standards of conduct set for ordinarily prudent railroads dealing with situations of this kind. Since plaintiff is obliged to show that he acted like an ordinarily prudent man, it might well be asked why he did not either complain of the effects of the work, or ask to be transferred, or seek any of the opportunities for advancement that the proof showed were offered to employees, so that he might get into different work. He may not have known about silicosis but, if his testimony is true, he knew that he was coughing and choking, and othewise being made uncomfortable by inhaling fine sand dust day after day; he must have been indifferent or careless, to say the least, when he made no attempt during these many years to offset or combat the effects of these conditions."

Nevertheless, the court cites a number of decisions of the New York Court of Appeals which "seem to indicate a determination to uphold jury verdicts in the face of impressive judicial opinion that the facts did not show negligence," and since it is the duty of the trial justice to follow the Court of Appeals, a motion to set aside the verdict and to direct verdict for the defendant is denied.

Benefits

Kunst v. General Bronze Corporation et al., decided by the New York Court of Appeals, October 29, 1942; reported at 289 N.Y. 121.

This decision affirms an earlier decision of the Appellate Division of the New York Supreme Court (264 App. Div. 494) upholding an award of the State Industrial Board under Article 4-A of the New York Workmen's Compensation Law for death benefits to a widow. The husband was employed as a molder, and on April 20, 1939, became disabled as a result of silicosis. The board computed compensation benefits due under Section 66 of the Workmen's Compensation Law at $2,200, and on August 14, 1940, made an award for that amount. On June 30, 1941, the husband died from silicosis and the widow made a claim for death benefits. On September 17, 1941, the State Industrial Board made an award payable from the date of disablement (rescinding and replacing the disability benefits previously awarded) at the rate of $10.39 per week, in a total sum of $3,500 less payments already made in the disability case. The insurance carrier contended, unsuccessfully, that the maximum of $2,200 which was in effect at the date of disability and afforded the basis of the original award is controlling and that additional compensation for death was not permissible under Section 66 of the Workmen's Compensation Law.

LABOR DECISIONS

Partnership to Avoid Labor Act

Walling v. Plymouth Manufacturing Corporation et al., decided by the U. S. District Court, Northern District of Indiana, South Bend Division, September 11, 1942, reported at 46 Fed. Supp. 433.

The defendant company was a small manufacturing corporation in a rural community. It gave (according to the court's summary) greatly desired employment to something like one hundred men and women. It was in strained financial condition and had made no profit for a number of years prior to 1938. When the Fair Labor Standards Act of 1938 was passed and it became known that it would go into effect in October, 1938, it was decided by the executive officers and announced to all its wage earners that the corporation could not continue in business and comply with the requirements of the act. After many conferences it was decided to form a co-partnership among those former employees who desired a continuance of the business and their jobs. The partnership was formed. The employees became copartners, with drawing accounts and an agreement, in writing, that they were to share in the profits, if any. All were to have a just and fair interest in the profits, to be allocated to each worker, according to his contribution of labor.

The court holds that there was nothing illegal or immoral in this arrangement, even though it was entered into by all the parties with the avowed intention to avoid the impact on the business of the corporation of the Fair Labor Standards Act. "It was not the declared purpose of this act to put small concerns out of business. . . . To abandon the operation of a small industry because, under the economic impact of a law enacted by Congress, that makes it non-feasible to continue operations, is neither reprehensible nor illegal. . . . To organize the employees of the concern into a copartnership for the purpose of continuing operations and thus affording employment for something like one hundred workers, for the betterment of not only the workers but the community as a whole, was not only legal but laudable."

Since the court finds no evidence of fraud or evasion, an application of the Administrator of the Wage and Hour Division for an injunction is denied.

Interest on Legal Penalty

Campbell v. Zavelo, decided by the Supreme Court of Alabama, October 8, 1942; reported at 10 So. (2d) 29.

The court holds that following the application made of the Fair Labor Standards Act of 1938 by the United States Supreme Court in the case of *Girschbaum v. Walling,* 316 U. S. 517, 62 S. Ct. 1116, "and extending the influence of the statute to the building in which goods of the class are fabricated," will be extended also to a repairman or shoemaker in this case who reconditions second-hand army leather goods and sends large portions into the avenues of interstate commerce.

The court further rules that the compensation by way of liquidated damages for failure to pay minimum wages is not a penalty or punishment of the government, and that interest should not be computed on the double payment for overtime work authorized by the act. "That

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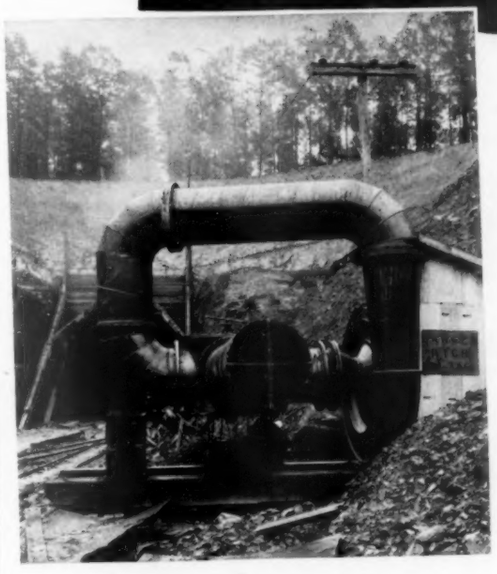

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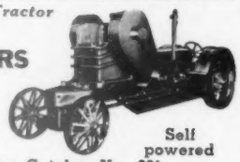
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is to say, the provisions of the act of Congress are the limits of liability which can be imposed on an employer. The justice of this holding is dictated by the difficulty of the employer to ascertain whether or not his business is within or without the act of Congress. The amount sought is not within our statute and decisions providing for interest on failure of payment of contract price."

Hours Agreement

Johnson et al. v. Dierks Lumber & Coal Company, decided by the U. S. Circuit Court of Appeals, Eighth Circuit, July 23, 1942; reported at 130 Fed. (2d) 415.

The workers seeking in this case to recover unpaid overtime compensation and liquidated damages under the Fair Labor Standards Act of 1938 were employed to grease and service trucks and tractors and to care for mules at camps, and to act as watchmen. The pay was based on 6 hours of work per day, which was the agreed maximum number of hours that the manual labor involved would require, and the overtime claim is based on the total time spent in the employer's service, including the time spent serving as watchmen.

Upon the record presented, "it can not be held as a matter of law," says the court, "that plaintiffs can be allowed compensation only for the hours devoted to manual labor . . . We do not think the act means that an employer may claim all of an employee's time and compensate him for only a part of it. An agreement to pay for only a part of the hours which an employee is required to serve is invalid. The purposes of Congress in enacting the statute can not be thus frustrated."

The action of the court below in directing a verdict for the defendant employer is reversed and the case is remanded for a new trial.

Interference with Union

National Labor Relations Board v. Martin Brothers Box Company, decided by the U. S. Circuit Court of Appeals, Seventh Circuit, June 23, 1942; rehearing denied, July 9, 1942; reported at 130 Fed. (2d) 202.

The employees of the respondent company formed a union and elected a president, who submitted to the company a proposed contract. After several conferences with a bargaining committee, the president of the company called and presided at a meeting of all the employees and informed them that a contract maintaining the wage scale then in effect was necessary for their protection and that the union representatives did not understand the situation. He further called upon the union president to sign the contract proposed by the company, and when the latter refused, told the employees that the union president was "a damn poor president and they ought to elect a new one."

The National Labor Relations Board held, and the holding is affirmed by the court, that by calling the mass meeting criticizing the activities of the union's bargaining committee and the union's president, suggesting that the union elect another president, and urging the employees to vote favorably upon the contract submitted to them, while failing to deal with the employees' chosen representatives, the company violated Section 8 (1) of the National Labor Relations Act.

The court further orders enforcement of the Board's cease-and-desist order, including provisions for reinstatement with back pay of two employees against whom the company was found to have discriminated.

Casual Sales Interstate

Samuels v. Houston, decided by the U. S. District Court, Southern District of Georgia, Augusta Division, June 30, 1942; reported at 46 Fed. Supp. 364.

An "ice puller" who worked for the employer concerned a little less than four months brought this suit to recover unpaid overtime compensation and other sums under the Fair Labor Standards Act of 1938. The evidence indicated, in the words of the court, "that the employer has no interstate sales as a part of his regular business, that he solicits no such business, that he accepts it only when he has a surplus stock of goods (ice) on hand, his primary, important and profitable business being to supply the requirements of his local customers within the state, that such sales are casual, intermittent and incidental, and that at various times of the year he has no surplus and can not sell to interstate buyers." The court therefore holds that the plaintiff "has failed to carry the burden the law places on him of showing by a fair preponderance of the evidence that a substantial part of his work was in interstate commerce or in producing goods for commerce, so as to be entitled to the

benefits of the act of Congress on which he relies." Recovery is accordingly denied.

Intrastate and Interstate

Jones et al. v. Springfield Missouri Packing Company, decided by the U. S. District Court, Southern District of Missouri, Western Division, July 9, 1942; reported at 45 Fed. Supp. 997.

The employer buys animals for slaughter, buying some locally and shipping some in from other states; distributes all its principal products, edible meats, in the state; and sells a small amount of by-products at its place of business. According to the evidence, the plaintiffs in this case, seeking recovery of certain sums under the Fair Labor Standards Act of 1938, were engaged in the production of goods distributed solely in intrastate commerce, so that whether or not the employer is engaged in interstate commerce, the plaintiffs are not entitled to recover under the act. While the evidence was "shadowy" as to what became of the by-products, constituting a "negligible" portion of the company's production, the court holds that, in the absence of evidence of what portion of the labor was devoted to such by-products and what portion to the principal product, recovery should be denied. "An employee working both interstate and intrastate must point out what part of his work was in intra- and what part in inter-state commerce."

Control of Union

National Labor Relations Board v. Thompson Products, Inc., decided by the U. S. Circuit Court of Appeals, August 28, 1942; reported at 130 Fed. (2d) 363.

This case was upon petition of the National Labor Relations Board for enforcement of an order that the respondent company cease and desist from dominating or interfering with organizations among its employees and withdraw recognition from and disestablish an "alliance" of its employees. Upon a consideration of the facts, the court orders enforcement, with certain modifications.

The test of whether a challenged organization is employer - controlled, says the court, "is not an objective one but rather subjective, from the standpoint of employees. . . . 'If the employees would have just cause to believe that solicitors professedly for a labor organization were acting for and on behalf of the management, the board would be justified in concluding that they did not have the complete and unhampered freedom of choice which the act contemplates.' Given the circumstances heretofore (in the court's written opinion) recited, there is room for such inference. . . . It is idle to argue that the acts of the respondent were justified because committed during the earlier days of the operation of the labor act and before the great body of law now existing had been developed. As already indicated, a labor board proceeding is not punitive but remedial and preventive. The purpose of the act is to secure the right of free choice to employees in the selection of their bargaining agencies, and so circumstances in mitigation of an employer's labor policy are not appropriate subjects for consideration. The employer must keep his hands off, and completely."

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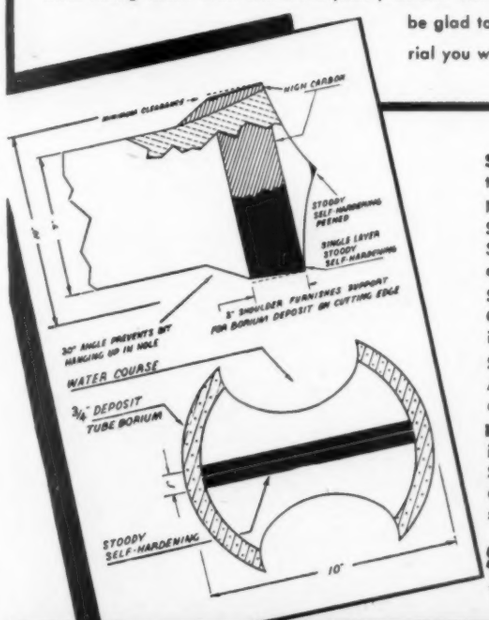
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TRAFFIC News Digest

I. C. C. Reports

Plaster.—Plaster, Portland, Colorado, to New Mexico. I. and S. No. 5125. By Division 3. Proposed restriction of the application of Rule 10 of the western classification in connection with rates on plaster, in carloads, from Portland, Colorado, to certain destinations in New Mexico, not shown to be just and reasonable. The schedules which were filed to become effective June 20, 1942, were suspended until January 20, 1943. This was on protest of the Colorado Portland Cement Company. The suspended schedules were ordered canceled and the proceeding discontinued.

Cement, Etc.—Cement, etc., I. and S. M.—2071. Baltimore and Washington to Front Royal, Virginia by Examiner Reese Harrison. Proposed new rates on fertilizer from Washington, D. C., to Front Royal, Virginia, unlawful because respondent lacked authority to engage in such transportation. Proposed new rates on plumbing supplies and equipment from Baltimore, Maryland, and Washington to Front Royal, and rates on cement from Washington to Front Royal, unjust and unreasonable. Proposed reduced rate on fertilizer from Baltimore to Front Royal not shown to be just and reasonable. The schedules filed by Bessie C. Pomeroy, of Front Royal, Virginia, doing business as Pomeroy Transfer, suspended until March 1 on protest of trunk-line territory. Rate proposed to be canceled and proceeding discontinued.

Molding Sand.—No. 28763. Hougland & Hardy, Inc. *et al. v.* Ahnapee & Western Railway Company *et al.* By Examiner G. H. Mattingly. Rates on molding sand in carloads, from Camden, Tennessee, Sandale, Indiana, and Piggott, Arkansas to points in central territory, western trunk-line territory, and Illinois Freight Association territory, proposed to be found unreasonable and reasonable rates were proposed for the future. Reparation also proposed. It was recommended that the commission find that the rates from Piggott and Camden were, and for the future would be, unreasonable to the extent that they exceeded or might exceed rates based on the industrial scale, using the distance formula prescribed in connection with that scale. That rates from Sandale were, and for the future would be, unreasonable to the extent that they exceeded or might exceed rates made on the above-mentioned basis plus 10 cents a ton, the additional 10 cents to accrue solely for the originating line. It was stated in the proposed report that an exception to the distance formula should be made where it was impossible to reach a particular destination over a three-line haul, or where a three-line haul would be unduly circuitous in comparison with a four-line haul.

Truck Reports

Bramwell, West Virginia.—M. C. 96495. Marvin A. Tabor. Common Carrier Certificate proposed. Coal, lime, sand, crushed stone, rock, rock dust, and household goods, between points in Tazewell County, Virginia, on the one hand, and, on the other, points in Mercer, McDowell, and Wyoming Counties, West Virginia, over irregular routes.

Columbus, Ohio.—M. C. 12267. William S. Merriman, broker application. License proposed as broker of transportation by motor vehicle of clay products and building material between points in Indiana, Ohio, and Pennsylvania.

Lime and Calcites.—The Commission, Division 3, heard oral arguments December 3 on I. and S. No. 5050, roaster calcite, West Virginia and Ohio to Official Territory, embracing No. 28,666, the Ohio Calcium Company, Inc. *v.* The B. & O. R. R., *et al.* The main question was whether or not rail rates on fluxing materials composed, in base or structural volume, of limestone, from producing points in Ohio and W. Virginia to official territory destination should be increased to the level of the corresponding rates on lime, taking into consideration transportation characteristics common to all the products. Counsel for the interested parties gave oral arguments on exceptions to the proposed report by Examiner Alfred G. Hagerty.

Those participating in the argument were Herbert Baker of Columbus, Ohio, for the Ohio Calcium Company, Inc.; F. R. Cross of Baltimore for the railway carriers; W. W. Collin, Jr., of Pittsburgh for a lime company; W. A. Hill of Washington representing the National Gypsum Company.

CENTRAL FREIGHT ASSOCIATION

Docket 71155. (Supplement No. 1 to W. D. A.) Stone, crushed, slag or gravel, coated with oil, tar or asphaltum, in open-top cars, carload. W. D. A. 71155, D. B. 3134, of June 29, 1942, covering proposal to establish rates on, from Grand Rapids, Michigan, to various points in Connecticut, New Jersey, New York and Pennsylvania, is hereby withdrawn from docket on request of proponent.

Docket 72253. (Shipper's proposal) Sand, except sand, molding bonded, naturally or otherwise, and except ground or pulverized sand, or gravel, in open-top equipment, carload. Establish a rate of $1.21 per net ton from Akron, Ohio to Victory, Pennsylvania *via* B. & O. R.R., New Castle, Pennsylvania, P. R.R. Subject to Ex Parte 48 increase.

Docket 72272. (Carrier's proposal) Stone, *viz.*: Fluxing, furnace, foundry, melting or refractory, unburned, in bulk, carload. Establish a rate of $1.65 per gross ton from Maringo and Milltown, Indiana, to Middletown, Ohio. Subject to Ex Parte 148 increase.

Docket 72348. (Carrier's proposal).—Lime, agricultural, common, fluxing, hydrated, quicked or slaked, in straight or mixed carloads. Establish a rate of 23 cents per 100 pounds on a minimum weight of 30,000 pounds and 18 cents per hundred on a minimum weight of 50,000 pounds from Menominee, Michigan, to Ashtabula, Ohio *via* specific routes. Subject to Ex Parte 148 increase.

Docket 72402. (Shipper's proposal) Crushed stone, when shipped in bulk, in open-top cars, carload. Establish a rate of 99 cents per net ton from Greenfield, Ohio to Osborn, Ohio *via* D. T. & I. R.R., Maitland, Ohio, Erie R.R. Subject to Ex Parte 148 increase.

Docket 72403. (Shipper's proposal) Limestone, ground or pulverized, unburned, crushed-stone screenings, not ground or pulverized, unburned, stone dust unburned, Carload minimum weight 60,000 pounds. Establish a rate of $2.59 per net ton from Northwestern Ohio Group 1 origins to Mallory, West Virginia. Subject to Ex Parte 148 increase.

Docket 72404. (Shipper's proposal) Limestone, ground or pulverized, unburned, carload, minimum weight 60,000 pounds. Establish a rate of $4.02 per net ton from Prairie du Rocher and Valmeyer, Illinois, to Fairmount, West Virginia. Subject to Ex Parte 148 increase.

Docket 72407. (Shipper's proposal) Cement flue dust in bulk or in packages, carload, minimum weight 60,000 pounds. Establish a rate of $1.93 per net ton from Speed, Indiana, to Waynesville, Dayton, Ohio, and Peru, Indiana. Subject to Ex Parte 148 increase.

Docket 72415. (Carrier's proposal) Cement, straight or mixed, carload, *viz.*: Common, hydraulic, masonry, mortar, natural or Portland, carload. Minimum weight 50,000 pounds, marked capacity of the car to govern if less. Establish on, from Buffalo, New York, to E. Clinton, Illinois, 23 cents per 100 pounds, East Hannibal, East Louisiana, East St. Louis, Illinois, and St. Louis, Missouri, 24 cents per hundred. Subject to Ex Parte 148 increase.

The name of Scully Steel Products Company, United States Steel Corporation subsidiary, was changed to United States Steel Supply Company, effective January 1, 1943. The new name will not involve any change in the management or the business. The principal reason for the change is to identify the company more closely with other subsidiaries of United States Steel Corporation.

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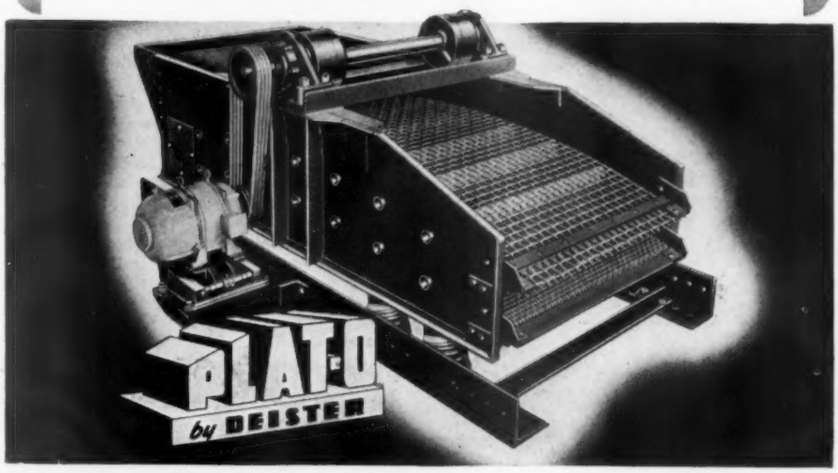
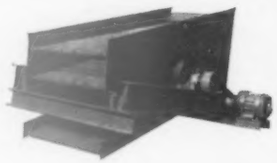


SCREENS



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Trade Literature

SCHRAMM FORDAIR COMPRESSORS IN ACTION. 4 pages. Schramm, Inc., West Chester, Pennsylvania.

WHITING PRODUCTS FOR INDUSTRY. 28 pages. Whiting Corporation, Harvey, Illinois.

BUTLER READY MIXED CONCRETE PLANTS. 40 pages. Butler Bin Company, Waukesha, Wisconsin.

LS-120 SHOVEL, DRAG-LINE, CRANE. 12 pages. Link-Belt Speeder Corporation, Chicago.

MORRIS HYDRAULIC DREDGES. 24 pages. Morris Machine Works, Baldwinsville, New York.

AMERICAN ECON-O-MATIC DRIVES. 32 pages. American Pulley Company, Philadelphia.

PROFITS IN CONCRETE. 8 pages. Scientific Concrete Service Corporation, Washington, D. C.

200TH ANNIVERSARY . . . 1742-1942. 53 pages. Taylor-Wharton Iron & Steel Company, High Bridge, New Jersey.

TIMELY TIPS FOR SHOVEL, DRAG-LINE AND CRANE OPERATORS. 32 pages. Lima Locomotive Works, Lima, Ohio.

MODEL E ASPHALT PLANT. 12 pages. Iowa Manufacturing Company, Cedar Rapids, Iowa.

MARCY MILLS. 32 pages. Mine & Smelter Supply Company, Denver.

A COMPLETE LINE OF WELDING ACCESSORIES. 28 pages. General Electric Company, Schenectady, New York.

EQUIPMENT FOR QUARRIES AND CONTRACTORS. 42 pages. Ingersoll-Rand Company, New York City.

MOTOR FITNESS MANUAL. 40 pages. General Electric Company, Schenectady, New York.

A GUIDE TO BETTER BEARING LUBRICATION. 28 pages. SKF Industries, Inc., Philadelphia.

Recent Books

AMERICA AND WORLD MASTERY, *by John MacCormac. Published by Duell, Sloan & Pearce, Inc., New York. 338 pages. Price $2.75.*

If the contents of this book are startling, it is because this book represents the first public expression of these ideas. It crystallizes the thought which the most intelligent men in America have been giving to the problem of international relations after the present war. Its startling nature derives from the brilliance and clarity of the author's presentation, and the complete logic of his argument.

From its opening challenge through successive chapters which embrace every aspect of world affairs today, the author develops his ideas. He unrolls a chart of the world situation as it will be if the present war is successfully concluded by the democracies. He then proceeds to indicate the two alternatives which America will inevitably face: (1) a withdrawal once again, as after World War I, into its traditional isolationism; or (2) a program of democratic and independent coöperation with Great Britain to assure peace and economic equality to all the world.

America at last realizes not only that she can not remain isolated in the modern world, but also that the modern world cannot remain at peace without America. America must take an active part in the ordering of world affairs.

LABOR ARBITRATION, *by John A. Lapp. Published by National Foremen's Institute, Deep River, Connecticut. 235 pages. Price $3.50.*

The growth of "labor arbitration" has made it necessary for industrialists, labor leaders, lawyers and arbitrators to engage extensively in settling labor disputes by this process. Here is a book that gives, in brief compass and in practical terms, an outline of the principles and procedures of such arbitration.

The author has served as impartial arbitrator on more than 400 cases in many industries in the last decade and is remembered in the pit-and-quarry industries as the arbitrator in the East Chicago ready-mixed-concrete jurisdictional dispute between engineers and drivers a few years back.

Arbitration of labor disputes has come through the formative stages during which doubt and suspicion clouded its benefits. It has now arrived at a place of major significance as an instrument not only to settle labor controversies, but for the promotion and preservation of harmonious labor relations in industry and commerce. It is particularly in a place of first importance during the war period when strikes are forsworn in place of peaceful means of adjustment of controversies between employers and workers.

GEOLOGY AND ENGINEERING, *by Robert F. Leggett. Published by McGraw-Hill Book Company, New York. 650 pages. Price $4.50.*

Written from a practical, engineering point of view, this book presents a review of the application of the science of geology to the whole field of civil engineering. Its three parts present an outline of the science and methods of geology, detailed explanation of geological applications in improving the planning and construction of all types of civil engineering structures, and useful reference material.

From the first part of the book the engineer obtains a concise outline of the fundamentals of geology, including the preparation and interpretation of maps, written from his viewpoint and covering the facts he needs for practical understanding of the many applications of geology dealt with in the succeeding section of the book.

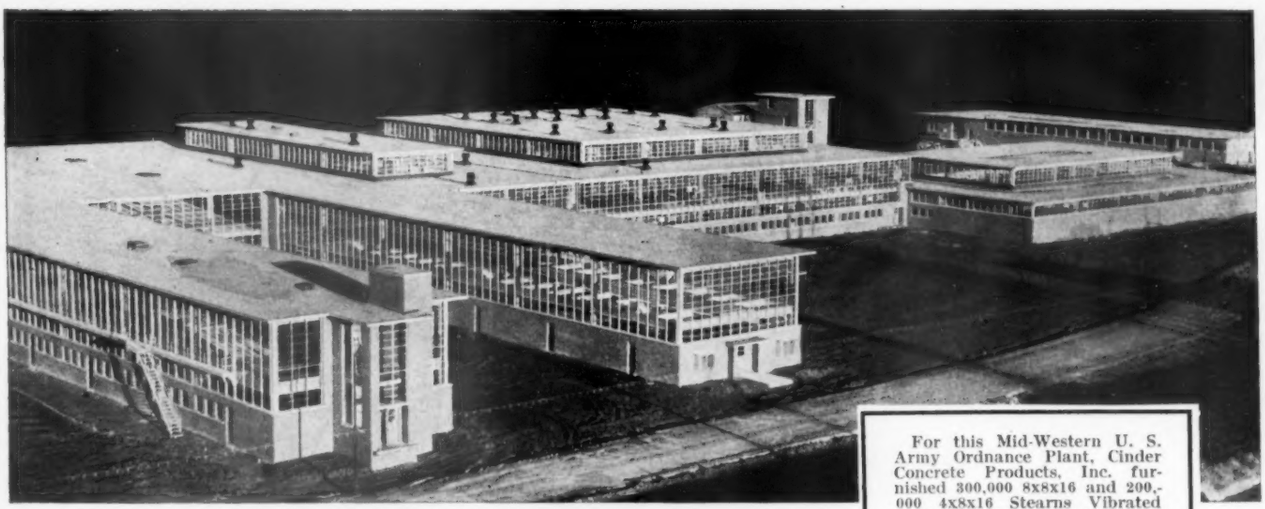
In the second and largest section of the book, sixteen chapters give specific, practical information—definite problems in all types of structures and parts of structures on which earth and rock constitution and water supply have important bearing, definite geological applications to save trouble and expense in solving these problems, and definite examples that make plain the methods and what can be accomplished with them.

Part III gives useful reference material, completing a thorough introduction to the practical aspects of geology for engineers.

January, 1943

The CONCRETE MANUFACTURER

A Special Section of ... IT



For this Mid-Western U. S. Army Ordnance Plant, Cinder Concrete Products, Inc. furnished 300,000 8x8x16 and 200,000 4x8x16 Stearns Vibrated Cinder Blocks. Exterior walls faced with clay brick, all interior wall surfaces painted.

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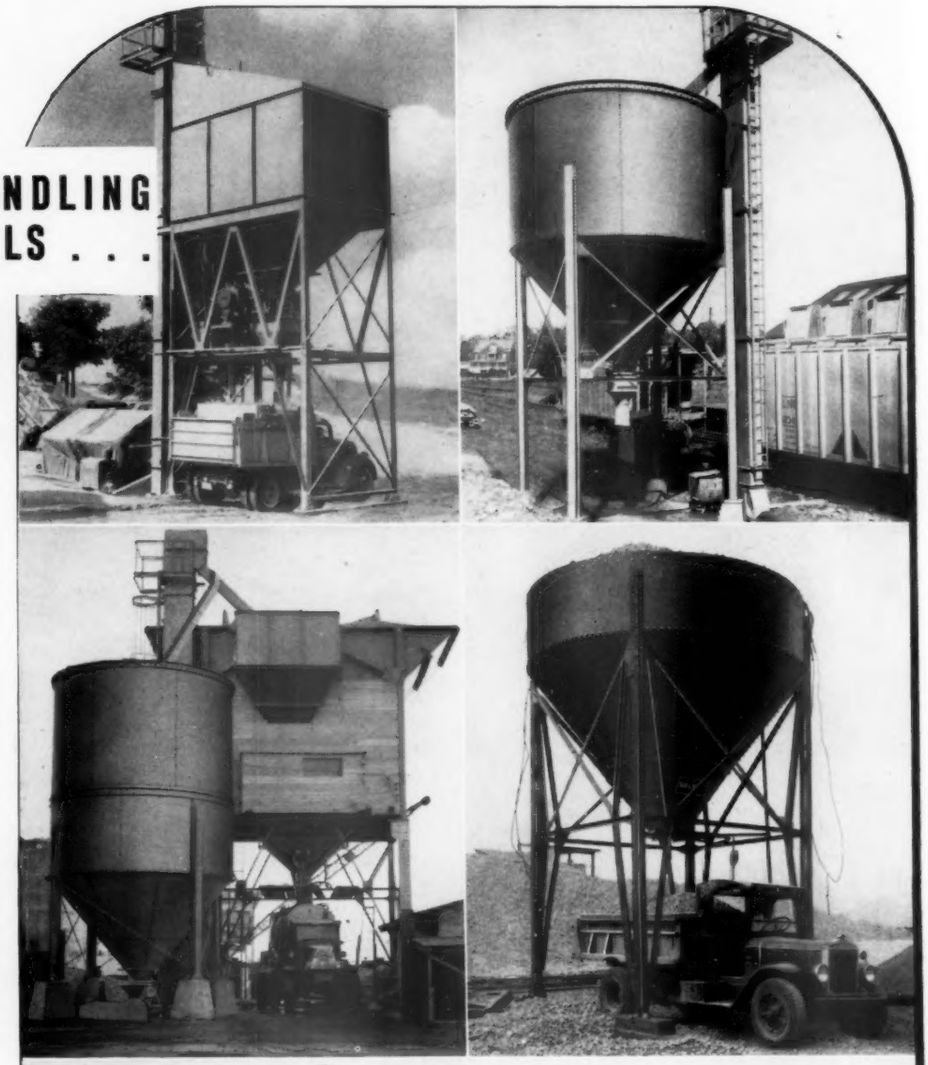

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The CONCRETE MANUFACTURER

January, 1943

A SPECIAL SECTION OF PIT AND QUARRY DEVOTED TO PRODUCTION MARKETING AND USES OF CONCRETE PRODUCTS AND READY - MIXED CONCRETE

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Blocks Protect Vital Detroit Installations

Bullet-proof and weather-resistant walls of concrete masonry units are protecting Detroit's water system and vital electric power equipment from damage by sabotage or enemy machine gun fire. The walls, in some instances 20 feet high, are laid in mortar with units having sand-filled cores.

When production strategy made Detroit a key point in the manufacture of war matériel, city officials, civilian defense authorities and the War Department, made a thorough survey of Detroit's defense setup. Obviously water supply came first on the list. It was found that while equipment at pumping stations was safely housed in permanent buildings, electric transformers for supplying power to pumping equipment and some of the chlorine tanks for water purification were out in the open, unprotected except for the traditional wire fence.

Under the direction of Laurence G. Lenhardt, general manager and superintendent of the Detroit Department of Water Supply, and L. V. Garrity, assistant superintendent, Assistant Mechanical Engineer H. E. Watson was assigned to design protection for vital points. After a study of various proposed types of protective enclosures, it was decided that lightweight concrete-masonry units with sand-filled cores, laid in mortar as a permanent wall, provided the type of protection required without using scarce materials needed for munitions.

A number of factors were carefully considered in determining to use sand-filled concrete-masonry units. Ordinary sand bags were out of the question because of their short life when exposed to weather and because there is a critical shortage of cloth sacks. The walls at the Detroit pumping stations had to be from 17 to 20 feet high, a height which would require a base several feet thick if built of sand bags.

When various masonry walls were investigated, the protection afforded by sand-filled concrete-block walls against rifle or machine gun fire and bomb splinters was considered an outstanding feature. Weight was also a factor. Some of the walls required at the pumping stations would extend over underground installations. It was determined that lightweight concrete units, even when the cores were filled with sand, provided the lowest-weight masonry walls.

Economy, speed of construction and adaptability to architectural design were other important considerations in favor of concrete masonry walls—the latter feature making it possible to finish the protective walls to conform to the attractive architecture of the pumping stations if it should be decided to retain them after the war.

The two pumping stations were found to require 372 lineal feet of wall, 20 feet high. Walls were erected 16 inches thick at the bottom and 12 inches thick at the top.

As plans for the pumping-station walls progressed, it was decided to build similar protective walls for the electric transformers at the city sewage treatment plant at the same time, under a single contract.

The masonry units used were made by Cinder Block, Inc., headed by Roy McCandless, former president of the National Concrete Masonry Association. Herbert J. Vincent, sales manager, and Carl Asmus, salesman, worked closely with Detroit city officials in getting the plans completed and the work under way.

Borrows Truck-Mixer for Joy Ride; Lands in Jail

A 35-mile joy ride from Flint to Saginaw, Michigan, in a 16-ton concrete truck-mixer sent Thurman Ruby, of Lennon, Michigan, to jail December 4 to await examination by a psychiatrist. Ruby, who "borrowed" the loaded mixer at the yard of a building-supply company where he once worked, was arrested in Saginaw after a minor accident and while company officials were trying to locate the vehicle.

Officials feared the concrete would harden and ruin the mixer, but Saginaw police had dumped the contents before damage was done. Ruby told police he had damaged his automobile in an accident and took the mixer "on an impulse" to go to Saginaw to see his wife.

The CONCRETE MANUFACTURER

Ready-Mixed-Concrete Industry Helps Build Many of Country's War Plants

DURING 1942 the ready-mixed-concrete industry continued to play its part in supplying a large and growing proportion of the concrete required to build our vast network of essential war projects. It would be impossible to make even an approximation of the volume of ready-mixed concrete poured during the year but there is little doubt that it far exceeded that of any previous year. With the construction volume far ahead of 1941 or any other year in our history and with ready-mixed concrete being specified in more and more projects no other conclusion can be reached.

This wide spread activity would not have been possible without full coöperation among the producers, especially with regard to truck-mixers. Those less fortunately located are renting their equipment to the ones who have jobs under contract and old, obsolete mixers and agitators have been put back into service to meet local demands. One of the rarest of sights this year has been an idle truck-mixer. A typical case was that of a Kansas City producer operating a permanent plant in that city who got the concrete contract for a large war plant. His own mixer fleet was unable to meet this large increased demand so additional units were rented from producers in Topeka, St. Louis and other cities.

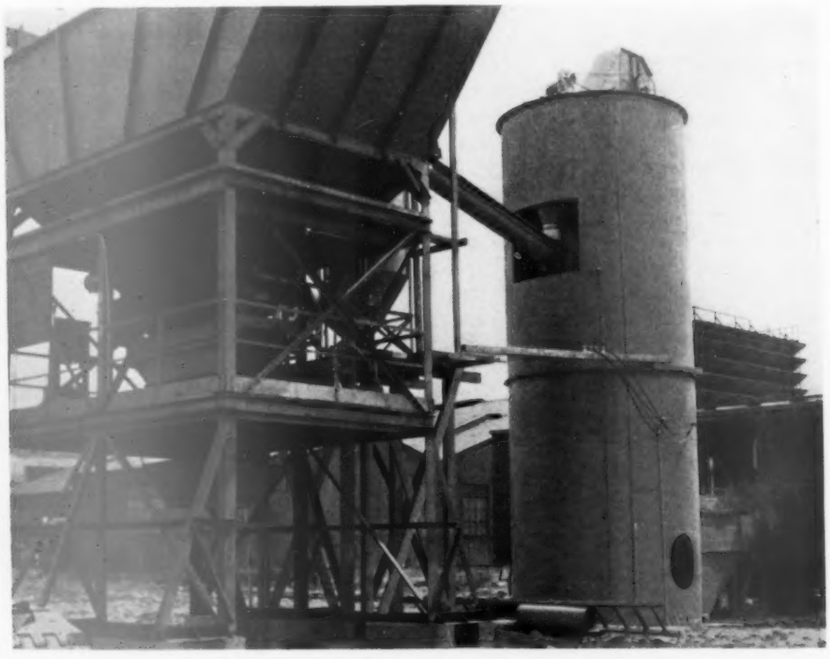
The established permanent concrete-batching or central-mixing plants on the whole did not share in this expanded output except in cities where important war-plant construction was carried on. Many of those least fortunately located were faced with the alternative of either going out after business or going out of business. With war projects going up in all parts of the country this resulted in an unparalled shifting of equipment from one location to another as needed. One established producer in New York City, who had supplied the concrete for a huge air base in Newfoundland and an ordnance plant in Wisconsin, is now working on other important jobs in Michigan and Virginia. A Los Angeles producer who has supplied projects in Oregon, Arizona and all parts of California is now operating a plant near Denver and several others throughout California.

Judging from all available indications, the present tempo of production will carry over into the first half of 1943 at least, but it seems apparent from the rate at which contract lettings are falling off that a gradual decrease in business can then be expected. It is also possible that restrictions on private construction may then be relaxed enough to keep production at a reasonable level.

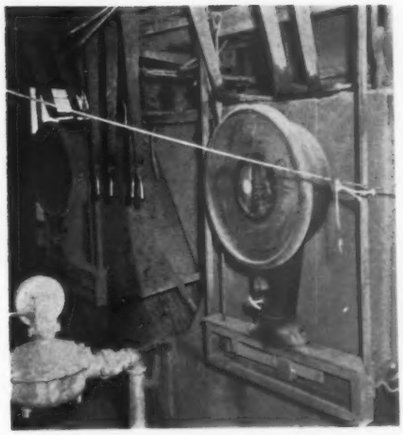
Joint Ventures The three large producers in the Los Angeles area were again in the forefront of this activity and ranged far and wide in providing concrete for many important projects. Most of these jobs were contracted for individually but in at least one notable instance an important job was handled cooperatively. When the contract came up for the production of crushed stone, sand and concrete for the construction of the Bellemont Project, an ammunition-storage base near Flagstaff, Arizona, no one of these companies was able to handle the job alone because of other commitments. Accordingly, the firm of Joint Ventures, Inc., was formed and each of the three companies supplied a part of the necessary equipment.

The Henry J. Kaiser Company plant which supplied 70,000 cubic yards of concrete for a shipyard.

The contract called for the production of nearly 200,000 cubic yards of sand and stone, the mixing of the concrete and its delivery to the jobs. Separate plants were set up for the production of the two aggregates which were handled by trucks to the projects. There they were discharged into four wooden bins from which belt-conveyors fed



A ready-mixed concrete batching plant similar to that operated by the Blue Diamond Corporation at Mira Loma, California. Compact cement silo is at right.



The weighing batcher, scales and water meter in the Kaiser plant at a naval-supply depot.

them to the Conveyor Company steel plant bins. The cement used was handled by a Conveyor Company storage system with a 20,000-barrel laminated-wood reserve-storage bin. Conveyor Company weighing batchers were also used. This plant had a capacity of about 3,000 cubic yards in 24 hours but was never called on for more than 2,250 cubic yards.

For some of the more distant pours four portable transfer rigs were used. Dry-batched aggregates and cement were hauled from the main batching plants to these rigs from which the concrete was loaded into truck-mixers. A fleet of 24 truck-mixers of 4-cubic yard capacity was used.

Blue Diamond The activities of the Blue Diamond Company in this field were probably spread over as wide an area as those of any other operator. This company began producing ready-mixed concrete in Los Angeles in 1938 with a fleet of 4 truck-mixers. This has been steadily expanded until it now comprises 32 Jaeger 4-cubic yard mixers. Of these, 22 were bought since 1940 and are of the high-dump type.

Prior to 1942 these mixers operated mainly from the company's Los Angeles yard where a permanent batching plant with a capacity of 160 cubic yards per hour is maintained. Some jobs, out of reach of this plant but in the Los Angeles area, were also serviced by means of portable batching plants. This type of business became more important from year to year and the company now has six portable aggregate-batching plants and two more which are equipped for bulk-cement handling. Most of these were supplied by the Conveyor Company. At present about 75 per cent. of the concrete being produced by the company comes from these plants.

In serving important war construction projects all over the west these plants have led a nomadic existence. One plant supplied 85,000 cubic yards of concrete for an army cantonment near Medford, Oregon, during the summer. Within a few weeks after this job was completed the same plant was in operation near Denver beginning a 200,000-cubic yard concrete contract for a huge new ammunition plant. This is a Blaw-Knox aggregate-batching plant.

Some of the other plants have also been moved around to all parts of California. At present one is located at Lakewood near Long Beach supplying the concrete for widening an important highway through one of our biggest aircraft-manufacturing centers. This is a Conveyor Company aggregate-batching plant served by a Northwest crane.

Another plant is located near Mira Loma, California, and is supplying 55,000 cubic yards of concrete for a branch depot of the U. S. Army Quartermaster Department. This plant is equipped for bulk-cement handling and batching. The cement is elevated to a 1-ton hopper at the top of the 350-barrel Conveyor Company cylindrical steel storage silo and overflows into the silo. A screw-conveyor feeds it from the hopper to a Conveyor Company weighing batcher which is equipped with a Kron dial scale and an automatic cut-off. A screw-conveyor feeds cement from the bottom of the silo to the elevator.

A Link-Belt Speed-O-Matic 1½-cubic yard crane supplies sand and gravel to a 90-ton 3-compartment bin, which has a 2-cubic yard batcher with a Kron dial scale. With a fleet of 9 Jaeger mixers, this plant has produced as much as 1,024 cubic yards of concrete in 10 hours.

Henry J. Kaiser The Henry J. Kaiser Company has for some years been a leading producer of ready-mixed concrete in the San Francisco Bay area. Perma-

The 2-cubic yard crane unloading aggregates to stockpile from which it is conveyed to the Kaiser batching plant at a shipyard.

The Henry J. Kaiser Company plant which is supplying concrete for a naval-supply depot. Conveyor from track hopper is at left.

nent plants are operated in Oakland, and Alameda, California, and, in recent years, temporary plants have also been built to supply concrete for vital war projects in this area.

One such plant went into operation in April, 1942, to supply 70,000 cubic yards of concrete for a shipyard. A Northwest 2-cubic yard crane unloaded the aggregates to a 3,000-ton stock pile over a tunnel from which it was conveyed to the 150-ton capacity, 4-compartment plant bins. Bulk cement was received in cars and was unloaded by two Link-Belt power shovels. Each

The batching plant operated by the Blue Diamond Corporation near Lakewood, California.

served a separate hopper from which Noble screw-conveyors and elevators fed the cement into the same 500-barrel plant storage tank. This dual cement-handling system was necessary in order to insure sufficient capacity for the 150-cubic yard per hour output of the plant. Noble Company equipment was used throughout.

The interesting feature of this plant was the Noble automatic batching system. A 2-cubic yard fully-automatic batcher was at first used but was later replaced by one of 4-cubic yard capacity. This had a central inclosed cement compartment with its own discharge gate so that the cement did not come in contact with the aggregates until they were discharged into the truck-mixers.

The operator first set weights on the beams of the batcher scale at the desired setting for each of the aggregates and the cement. Then a control lever was thrown to start the automatic sequence which weighed out the cement and each of the aggregates in order. Each air-operated aggregate gate had an

The Burroughs Transit Mix plant in Flint, Michigan, in which all material handling is done by gravity.

automatic dribble arrangement which at a certain point shut it to half opening for final feed and accurate weighing. The 12-inch screw-conveyor which fed cement to the batcher had automatic air-operated louvre gates with machined fit to prevent leakage. The automatic control opened these gates, started the screw-conveyor and then reversed these operations at the proper point. When the sequence was completed a signal light would notify the operator that the batch was completed. The batch was then dumped through manual controls. This plant was operated two shifts daily.

Another plant was erected in September to supply concrete for a naval-supply depot in the Bay area. The original contract called for 125,000 cubic yards of concrete and 250,000 cubic yards has since been added. A complete new C. S. Johnson central-batching plant with a capacity of 100 cubic yards per hour was installed.

This plant has a 4-compartment, 400-ton aggregates bin and a 300-barrel cement bin. Aggregates are received by railway and a short belt-conveyor feeds them to the main conveyor to the plant bins. A power scraper unloads the cement from cars into a screw-conveyor, and a bucket-elevator feed it to storage. The 4-cubic yard batcher is fed through manually-operated gates and is equipped with separate Kron dial scales for the cement and aggregates. The water is measured by an automatic meter.

The company's entire fleet now consists of 35 truck-mixers of several sizes and these are used at the various permanent and portable plants as required. Most are Chain Belt Rex machines but a few Smith mixers are also used. All are mounted on Ford truck chassis.

Howat Concrete One of the really big ready-mixed concrete jobs of the year was the new War Department Office Building in Arlington County, Virginia. Some idea of the size of this structure may be gained from the fact that it required 300,000 cubic yards of concrete and that at one time over 13,000 construction workers were employed. The completed structure now houses about 40,000 workers who were formerly crowded into temporary buildings in Washington.

The two concrete-batching plants which supplied this concrete were owned by the government but their operation was supervised by the Howat Concrete Company which had the contract for mixing the concrete and hauling it to the job. Both plants were equipped with the SC_2 system of control to insure the high-

The George T. McLean Company plant which serves vital shipyards in the Norfolk area.

est possible quality of concrete and SC_2 technicians supervised the operation of the plant for the concrete company.

The original plant, which later was Plant Number 2 of the dual-batching arrangement which furnished the bulk of the concrete, began operations in October, 1941, from a temporary location. The final dual plant went into operation in January, 1942. When necessary it was able to load a truck-mixer every 40 seconds. A fleet of 35 Chain Belt Rex mixers was used. These were rated at from 3½ to 5 cubic yards each but all mixed 4-cubic yard batches.

The sand and gravel aggregates used were received in barges and unloaded to stock piles over a reclaiming tunnel. In this tunnel were two belt-conveyors, one running in each direction. These fed the material to the Barber-Greene belt-conveyors which discharged them into the separate bins of the two parts of the plant. Separate screw-conveyors and bucket-elevators fed the cement into the two-compartment cement bin which served both sections. Both plants had Butler aggregate and cement-weighing batchers equipped with special SC_2-Toledo dial scales and automatic graphic recorders. The aggregate beams of these scales were equipped for moisture compensation and the cement feed was provided with an automatic shut-off.

George T. McLean The George T. McLean Company is operating a new Heltzel concrete-batching plant in the Norfolk, Virginia, area which is serving vital shipyards. This plant has the well-known Heltzel features but is also equipped with a new type of bulk-cement reserve-storage bin. The bulk cement is unloaded from special cars to a screw-conveyor feeding a bucket-elevator. This can discharge

Loaded truck mixer at the plant of the Ohio Building Material Company.

the cement either into the plant bin or into the circular conical-bottom reserve bin. The cement is then discharged to the same screw-conveyor when needed in the plant. Both bins are equipped with air jets.

Burroughs Transit Mix One of the most economical of the new plants to operate is undoubtedly that of Burroughs Transit Mix in Flint, Michigan. This permanent plant is built entirely of steel and was designed and supplied by the Butler Bin Company which also supervised its construction. Full advantage was taken of the hilly topography and only one mechanical material-handling operation is necessary in the entire plant.

The story behind the organization of this company is also interesting. Roy Horning, as a building contractor, had been an occasional user of ready-mixed concrete and finally became so enthusiastic about its advantages over the job-mixed variety that he decided to go into this business. In order to do this on a scale which would justify the construction of a large-size modern plant he interested the building materials firm of J. P. Burroughs & Son, Inc., and formed the company of which he is now president and manager.

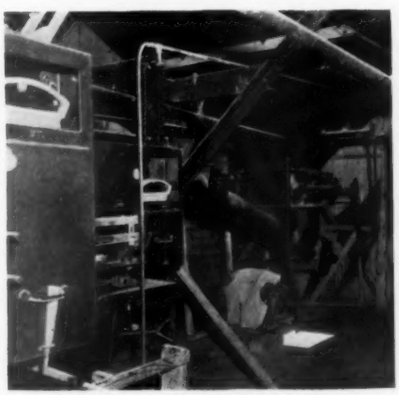
The aggregates received at this plant are discharged from trucks on a ramp into the three compartments of a 250-cubic yard bin. Bulk cement is discharged from special trucks into a cement bin which has a 290-barrel compartment for high-early-strength cement. The aggregates are discharged by gravity and the cement by means of a screw-conveyor into separate Butler weighing batchers which are equipped with multiple-beam scales. Water is weighed in a separate batcher. A truck-mixer needs to make only one stop to receive its load. Provisions are made for heating the aggregates in their bins and also the mixing water for cold-weather operation.

Ten Jaeger truck-mixers make up the present fleet, seven being of the high-dump type. Six of these machines are 3-cubic yard units and the others are rated at 2 cubic yards each.

Most of the concrete produced in this plant has been delivered within a radius of 1½ miles and this includes large orders for the expansion of important plants working on war orders.

The company also operates a portable batching plant at Ludington, Michigan, at which the concrete is being produced for the magnesium-metal plant being built there by the Dow Chemical Company. This project is expected to use about 60,000 cubic yards of concrete, although the original contract was for 35,000 cubic yards.

Ohio Building Material The Ohio Building Material Company, a pioneer concrete producer in Cleveland, in April, 1942, erected a Blaw-Knox batching plant in the near southeastern section of the city. This was done primarily to supply about 41,000 cubic yards of concrete for an ex-



Three views on the batching floor of the Burroughs Transit Mix plant. Aggregate scales at left; cement scale, bin and screw-conveyor in center; water-weighing equipment at the right.

The automatic bulk-cement handling system added to the C. W. Hartman plant at Bakersfield, California.

tension to the original Outhwaite Housing Project for Negroes which was built two years ago. As this project does not keep the plant busy, the company is also using it to fill regular orders which develop in this vicinity but would ordinarily be filled from the main yard and dock on the Cuyahoga River near the downtown section of the city.

As the housing project does not come under the defense classification, some delay was encountered in assembling the needed equipment and the plant was actually operated before all the equipment was installed. The housing project is using few critical materials. As an example, the concrete floors of the building use wire-mesh reinforcement in place of the usual steel bars, effecting a considerable saving.

The bulk cement used is received in trucks and a Link-Belt bucket-elevator discharges it into the 350-barrel cement bin compartment. The sand and the ¾-inch limestone aggregates are also received in trucks. An elevator feeds these to a revolving spout for discharge into the proper compartments of the Blaw-Knox circular steel bin.

The aggregates are discharged through lever-operated clam-shell gates and the cement through a rotary valve into a 2-compartment, 4-cubic yard Blaw-Knox weighing batcher with an attached cement compartment. Water from the city mains is measured in a volume tank. Air for jets in the cement bin is furnished by a U. S. tank-mounted air-compressor.

This plant has never been called on for capacity production but it has batched 100 cubic yards of concrete in 1 hour and 15 minutes.

The company operates a fleet of 19 truck-mixers, most of which are of Jaeger manufacture. This includes four new 4-cubic yard Jaeger mixers mounted on White trucks and seven 3-cubic yard Jaeger high-dump mixers which are only a little older. Because of the difficulty of getting new machines the company also uses in emergencies three old Barrymore mixers which had been idle for a long time.

Boichot Concrete Products One of the latest new plants to go in operation is that of the Boichot Concrete Products Company of Lansing, Michigan. This new Butler batching plant is replacing a rather cumbersome old plant which the company acquired a few years ago. Aggregate and cement elevators are eliminated by the use of a ramp from which trucks discharge the cement and aggregates into the bins. A 5-cubic yard Smith-Mobile truck-mixer was added to the four 2- and 3-cubic yard machines already in use. All are mounted on International truck chassis.

Ready Mixed, Indianapolis The Ready Mixed Concrete Corporation, Indianapolis, Indiana, in July built a new plant from which a large quantity of concrete has been produced for a war project. The erection of this plant effected a huge saving in time and rubber as the concrete would otherwise have had to be delivered from another plant three miles farther from the job. This makes four plants the company now operates in the city and it also owns a portable batching plant which has been used on out-of-town projects.

This company also supplied the concrete for a large war plant in Indianapolis from a portable mixing plant erected on the site. Prompted partly by a desire to save the rubber tires on its truck-mixers, the company installed two Chain Belt Rex Pumpcrete machines. Each of these delivered concrete to the job at the rate of 20 cubic yards per hour through a 6-inch pipe-line.

One of the simplest of the new plants was built by the Sager Concrete Products Company of Jackson, Michigan. Aggregates are discharged from trucks on a ramp into the Blaw-Knox bin.

The Thomas E. Currie Company, Detroit, set up its second batching plant primarily to furnish 20,000 cubic yards of concrete for bridges on a strategic express highway and a like amount for a housing project for war workers. Two new Jaeger 4-cubic yard truck-mixers were purchased, making a total of 16 now in use.

This plant of the Ohio Building Material Company is supplying concrete for a housing project.

Powell Brothers A plant of unusual design was built by the Bodinson Manufacturing Company for Powell Brothers of Alameda, California. The aggregates are received by barges or railway cars and in the former case are discharged into a stock pile by a belt-conveyor. A crane unloads aggregates from cars either to the stock pile or direct to the 6-compartment 250-ton plant bin.

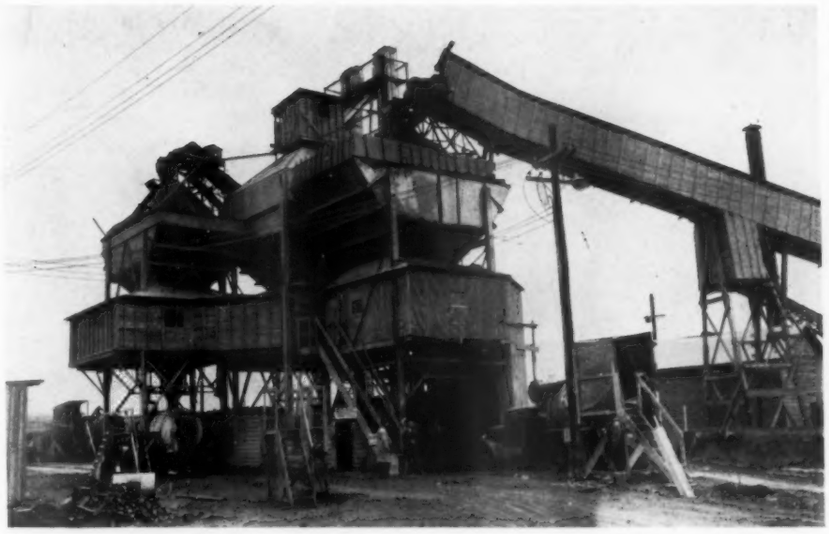
Bulk cement is elevated from the cars into one of two 250-barrel cylindrical steel tanks and when this is full a screw-conveyor feeds the overflow to the second tank. When this is full the overflow goes to a 1,000-barrel steel tank at ground level from which screw-conveyors feed it back to the cement elevator. The two small tanks are high enough for gravity feed into the 3-cubic yard weighing batcher which is equipped with a Kron dial scale.

The Acme Ready Mixed Concrete Company, Rockford, Illinois, entered the ready-mixed-concrete business with a new C. S. Johnson plant. The 3-cubic yard weighing batcher discharges concrete to the fleet of three Jaeger and two Smith 3-cubic-yard truck-mixers.

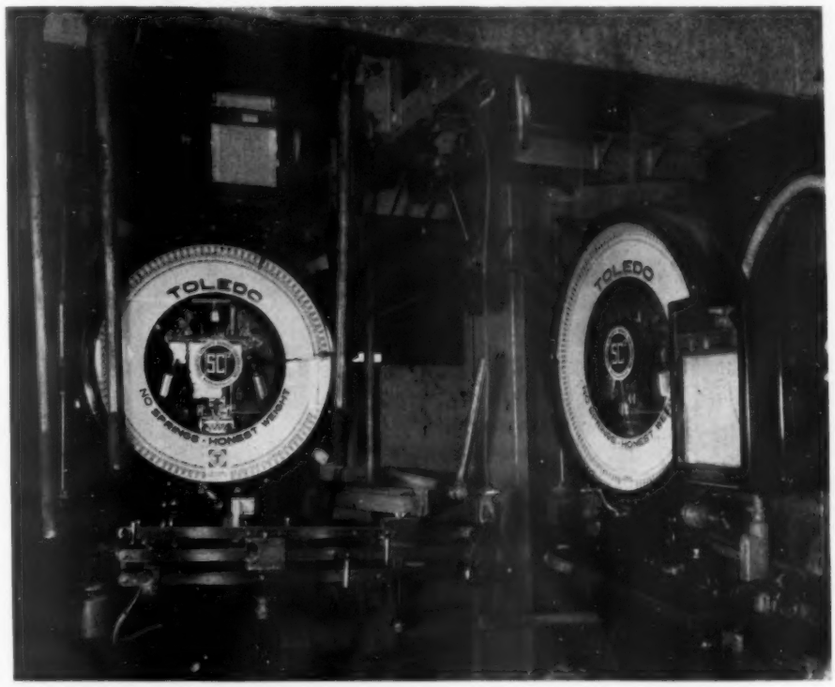
Cleveland Slag The Cleveland Slag Company, Cleveland, Ohio, in 1942 replaced its old batching plant with a new Heltzel plant. This company is primarily a producer of slag and operates a plant only to batch this slag into the truck-mixers of the Cleveland Builders Supply Company and other dealers who clear their orders through that company.

The sand and three grades of slag used in this plant are stored in 600-ton stock piles over a concrete reclaiming tunnel. Jeffrey - Traylor vibrating feeders under each pile discharge these materials on a belt-conveyor which runs to an elevator feeding the four 125-ton plant bin compartments. Bulk cement is discharged from trucks into a hopper and an elevator feeds it into two 300-barrel bins. The 4-cubic yard aggregate weigh-batcher and the cement batcher are both equipped with Kron dial scales. Both discharge their contents into a collecting hopper from which the truck-mixers are loaded. This water is added from the truck-mixer tanks at the job.

Another new ready-mixed-concrete producer is the Gottron Brothers Company of Fremont, Ohio. Its Blaw-Knox plant has two batchers, one for coarse aggregates and the other for cement and screenings. The company operates three 2-cubic yard Jaeger mixers mounted on Ford truck chassis.



The dual batching plant operated by the Howat Concrete Company to supply 500,000 cubic yards of concrete for the new War Department Pentagon office building.



This general view of the batching floor of one unit of the Howat plant shows the scales and recorders on the aggregate and cement weighing batchers.

C. W. Hartman, an aggregates producer of Bakersfield, California, added a new Noble automatic bulk-cement batching system to an older central-batching plant which formerly used sacked cement. The cement is now received in special trucks and is discharged into the bin through the usual screw-conveyor and elevator. Another screw-conveyor feeds the cement to a separate cement-weighing batcher.

The Central Pre-Mix Concrete Company, Spokane, purchased a Mixermobile portable concrete-mixing plant which it has used on a number of important projects. This unit has a capacity of 1,000 cubic yards daily.

Conserco Conserco, Inc., Washington, D. C., a company which specializes in renting truck-mixers to producers has been kept busy supplying the requirements of war jobs all over the eastern part of the country. A typical job was the construction of Camp Pickett at Blackstone, Virginia. The

concrete for this project was supplied by the Concrete Construction & Supply Company of Columbia, South Carolina, a long-established producer of this commodity. At one time 22 Conserco truck-mixers were used to keep up with the urgent demand for concrete on this project.

As many as 12 Conserco truck-mixers were used in the construction of Camp Campbell near Clarksville, Tennessee, on which the pouring of concrete started in May. The concrete contract was held by R. A. Wright & Sons of Atlanta, an affiliate of the Campbell Coal Company, a long-established producer of concrete in that city.

The Ready Mixed Concrete Corporation, Dayton, Ohio, purchased a Rex Pumpcrete unit to service large projects, predominantly war plants. Chain Belt Rex truck-mixers haul the concrete to the job, where it is placed by the Pumpcrete unit, saving the contractor much time and trouble. This unit has created an increased demand for ready-mixed concrete and has paid for itself. A flat charge is made for the smaller jobs while on large contracts charges are assessed on a yardage basis.

The DeBolt Concrete Company, Richmond, Indiana, improved its plant and added two new truck-mixers, a Jaeger and a Rex. A temporary plant was also built near Greenfield, Indiana, to supply concrete for highway bridges.

The Central-Ready-Mixed Concrete Company, Milwaukee, supplied the concrete used in building the Lone Star Ordnance Plant near Texarkana, Texas.

I. C. Garber & Son, Inc., Jackson, Mississippi, installed a plant to produce 65,000 cubic yards of concrete for an ordnance plant in Arkansas. A fleet of 15 truck-mixers was used and 10 of these were new Jaeger and Concrete Transport machines.

The Roquemore Sand & Gravel Company, Montgomery, Alabama, has been a leading producer of concrete for important war-projects in the South. This year a plant was erected to fill a huge contract for an army cantonment near Ozark, Alabama.

Maule Industries, leading producer of aggregates, ready-mixed concrete and concrete blocks in the Miami area, erected a plant at Wellston, Georgia, to supply concrete for important war work. A fleet of 50 truck-mixers was used.

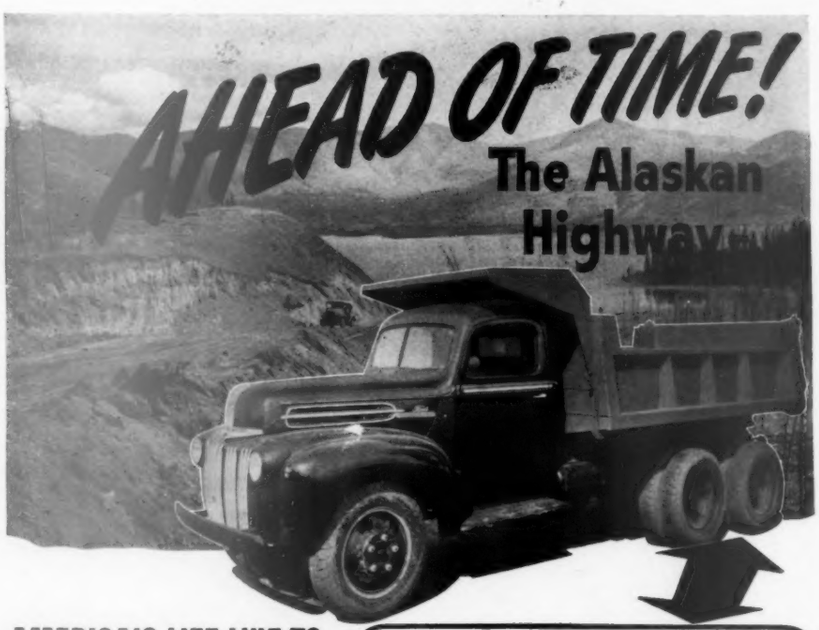
The Alexander Jarvis Company, Manchester, Connecticut, recently built a new plant to supply concrete for the basements and foundations of several hundred houses. Three truck-mixers were purchased.

The South Texas Materials Company, Corpus Christi, Texas, pioneer producer of ready-mixed concrete in that city, built a new plant near the site of a defense plant. A 20,000-cubic yard contract was filled.

The Fred Schmitt Material Company, St. Louis, Missouri, was so active during the year that 30 additional Concrete Transport truck-mixers had to be added to its fleet. In addition to completing its 450,000-cubic yard contract for the St. Louis Small Arms Plant, this company also supplied all the concrete for the Sangamon Ordnance Works, Wahoo, Nebraska; and the Satelite Air Field, Grand Island, Nebraska.

The H. B. Zachry Company, Laredo, Texas, purchased a fleet of six Concrete Transport truck-mixers.

Eight Concrete Transport truck-mixers were sold to E. A. Callaway and Son, Kansas City, Missouri. This company is supplying the concrete used in the construction of concrete ships made of Haydite concrete aggregates.



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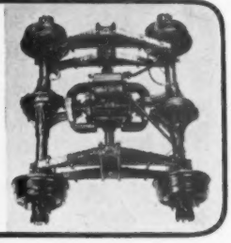

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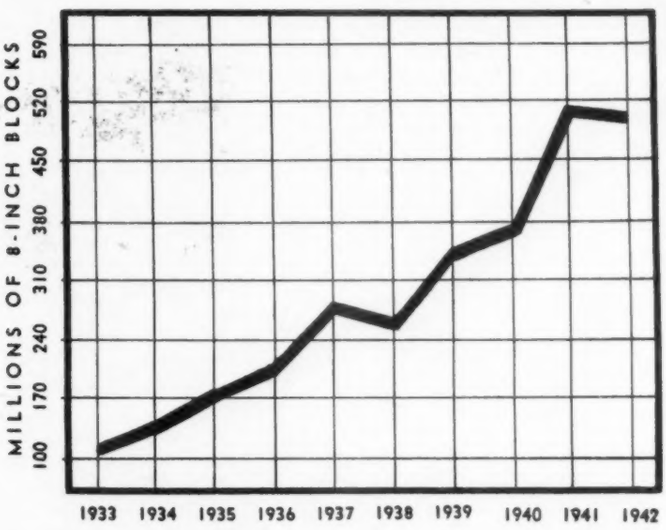


THE concrete products industry had another big year in 1942 but production is believed to have been slightly lower than in the record-breaking year of 1941 when about 500,000,000 concrete-masonry units (8-inch or equivalent) were produced and sold. The government ban on private construction, however, had an adverse effect on but few operators since the demand for units for war plants and war-housing facilities kept most products makers as busy as they cared to be with the armed forces slowly draining off much of the available supply of labor.

Late in the year, the War Production Board urged the nation's concrete-products manufacturers to increase their output because of the impending lumber shortage. Similar appeals were made to the clay- and gypsum-products industries.

According to WPB estimates, the supply of lumber will fall about 6,000,000,000 board-feet short of requirements for 38,000,000,000 board-feet in 1943. This shortage is due to large lend-lease requirements and construction programs of the army, navy, and other governmental agencies.

As iron and steel became almost impossible to obtain except for actual war use, many concrete-products operators began making a variety of special items to replace those made of the critical metals. Bathtubs, shower stalls, manhole and catch-basin covers and gratings, sash weights, and probably a score of other items were developed in concrete and found a ready market. More concrete pipe was probably

General view of "Tyltub" operations in California showing the concrete bathtubs in various stages of completion on the production lines. J. W. Thornton, in foreground, is in charge.

used in 1942 than in any other year. Burial-vault makers redesigned their product to eliminate much reinforcing steel and felt the impetus of a sales boom as bronze and other metal vaults went off the market by governmental order.

Fewer new plants were erected during the year as equipment became scarce, most manufacturers having converted to war production. Everywhere the tendency to conserve existing equipment was noticeable, close attention being paid to the repair and maintenance of machinery at the first indication of excess wear or damage. Plants were revamped to take the utmost advantage of available mechanical equipment to eliminate as many of the tasks formerly performed by human hand as possible.

Steel form and catch-basin assembly made at the Nelsen plant.

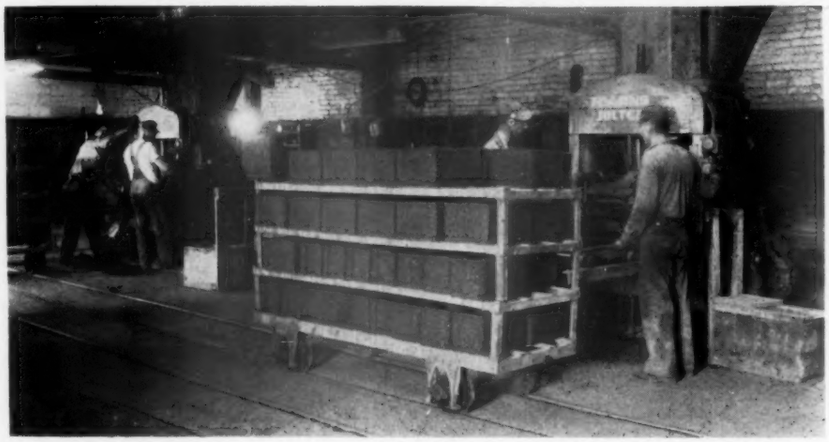
One of the most successful instances of the manufacture of "war babies" of concrete is found at the bathtub plant of Peter D. Donlan, operating as Tyltub Manufacturing, San Francisco. Nearly 3,000 concrete tubs lined with glazed tile were produced by this concern last year by line-production methods. All were used for war-housing projects in California. Each tub needed but 5 pounds of reinforcing steel. A complete story on the operations appeared in the December, 1942 issue of PIT AND QUARRY.

The Nelson Concrete Culvert Company, with plants at East St. Louis and Champaign, Illinois, also developed and sold a number of replacement products made with concrete. These included gutter-inlet grates for the Illinois State Highway Department, catch-basins and grates, manhole covers, well-casing sections and precast culvert headwalls. The company also set up a temporary pipe plant at Newport, Arkansas.

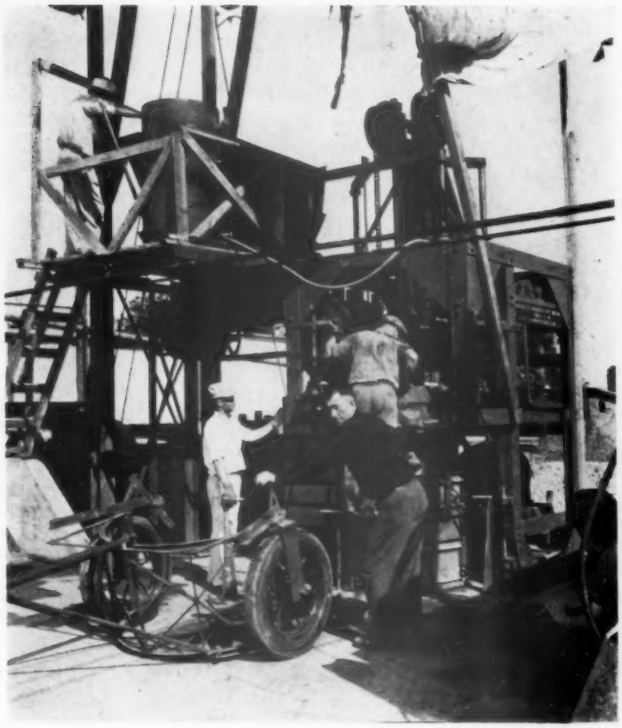
Manhole covers and frames, precast concrete shower bases, milk-cooling tanks and lighting standards were among the specialties made by the Badger Concrete Company of

Truck and trailer being loaded in the yard of the Illinois-Wisconsin Concrete Pipe Company at South Beloit, Illinois, for delivery to a new ordnance plant under construction.

Yard and plant of the Cinder Concrete Products Company at Kansas City.



The two vibrating block machines in the Cinder Concrete Products Company's Denver plant.

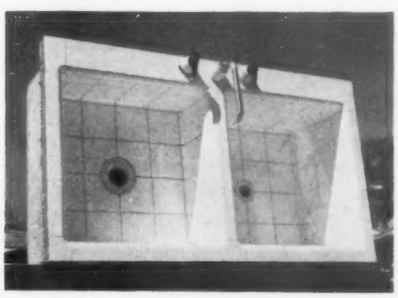


Two views of the new pipe machine set up in the yard adjoining the Illinois-Wisconsin Concrete Pipe Company plant at South Beloit.

Oshkosh, Wisconsin. In Michigan, the Superior Concrete Products Company and the Michigan Concrete Products Company of Detroit, and the Lamar Pipe & Tile Company of Saginaw did a thriving business in catch-basin and manhole assemblies. Fuel-oil storage tanks for residential use to replace standard steel tanks were an important product of the Flint Cinder Block Company, Flint, Michigan.

The North Shore Joist Company of Northfield, Illinois developed a multiple-unit grating for airport drainage and sold a large number of the assemblies for use in government airfields in the middle west. At Milwaukee, the Best Block Company produced a number of specialties, manhole frames and covers and concrete ash receptacles being of first importance.

One of the latest new products plants to go into operation was that of the Dayton Builders' Supply Company at Dayton, Ohio. This pioneer building-supply dealer had been selling blocks made out-of-town for many years but, when the war-construction boom reached its peak in this area, it became more and more difficult to guarantee delivery. Finally it was decided to build a plant in spite of the fact that all of the equipment desired could no longer be obtained. The plant was designed for later installation of mechanical aggregate handling and batching equipment but this part of the work is being done manually for the duration, or until equipment is available. This is a Besser installation complete with a 50-cubic foot mixer, skip, and Super Vibrapac block machine. During warm weather the blocks were cured in the yard but kilns have now been completed for cold-weather operation.

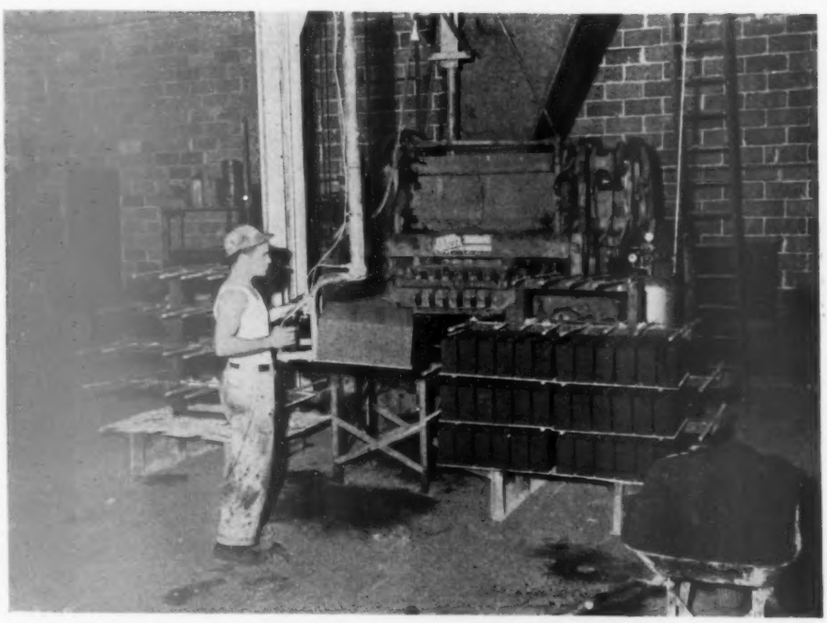


Combination sink and laundry tray with fittings in place made at the "Tyltub" plant.

Stripping one of the new type gutter-inlet forms at the Nelson Concrete Culvert Company plant, Champaign, Illinois.

A view of the plant and part of the yard of the Graystone Tile Company.

New block plant of the Stockbridge Stone Company.



The automatic block machine and operator at controls of air-powered off-bearing hoist in the Grays Ferry Brick Company plant.

A Stearns Joltcrete machine is making the units at the new plant of S. A. Morman & Company at Grand Rapids, Michigan which was in full production at the beginning of the year. The Martin Fireproofing Company, operating a plant at North Tonawanda, New York for the production of special lightweight slabs for roofs, doubled its output by opening a second plant in Albany. The units were used on several munitions factories and on other war construction in that vicinity.

The Brady Roofing Tile Company put a new plant in operation in Miami, Florida for making roof tiles. L. W. Nelsen, well-known Illinois products manufacturer, and his daughter, Miss A. L. Nelsen, are partners in the enterprise.

The plant of the Grays Ferry Brick Company, West Conshohocken, Pennsylvania was expanded, making it one of the most efficient in the east. Power-driven lift-trucks are used exclusively. A Besser Vibrapac produces the units.

The new Lith-I-Bar joist plant of the Gravel Products Corporation of Buffalo, New York was formally opened on June 6, 1942 when more than 250 architects, builders and other guests witnessed the manufacture of joists on the company's new equipment. Joists are being produced in five depths—6, 8, 10, 12, and 14 inches—and in lengths up to 36 feet.

Flam vibrating block machines are used in the new plant of the Graystone Tile Company in North Hollywood, California. The owner, J. W. Schulze, a retired contractor, has been in the products business for more than 12 years.

New Stearns Joltcrete machines were installed in the Denver and Kansas City plants of Cinder Concrete Products, Inc., in 1942, greatly increasing the output of both plants. The Denver plant produces cinder units exclusively while the Kansas City operation makes both cinder and gravel blocks, the latter comprising about one-third of the plant's output.

Among other new plants erected in 1942 was one owned by the Fischer Lime & Cement Company at Memphis and operated as the Concrete Products Corporation. Blocks are made on a Stearns Joltcrete machine and a Kirkham vibrator. The new plant of the Marion Cinder Block Company at Marion, Virginia has 1,800 square feet of curing-room space. Units are made on a Kirkham vibrator.

The Chartiers Cinder Block Company erected a new plant at Hous-

ton, Pennsylvania to replace an outmoded plant and increase production. A Besser Vibrapac is the chief production unit. A. L. Brown, formerly of Virginia, Minnesota opened a new plant at Baraboo, Wisconsin to manufacture concrete block and reinforced-concrete culverts. It is known as the Baraboo Concrete Products Company.

The new plant of Cinder Products, Inc., near Cincinnati has an output of 12,500 standard 8-inch units per day, all produced on two Besser automatic tampers. The Marietta Concrete Corporation, Marietta, Ohio is one of the country's leading makers of concrete staves for farm silos and storage bins. Production at its plants at Marietta, Baltimore, Scotia, New York and Lilesville, Pennsylvania is being augmented by a new plant reported under construction at Williamsport, Pennsylvania.

Webb & Turner, Seaford, Delaware; the Carolina Cinder Block Company of Durham, North Carolina; and the Lot Tile Company of De Soto, Kansas are also reported to have erected new plants during the year just closed.

One of the finest plant buildings to be erected was completed in 1942 by Seberger's Concrete Products Company at Gary, Indiana. The

High-lift gasoline-powered truck at work in the Grays Ferry yard.

building is built entirely of concrete-masonry units turned out on the company's Besser Victory stripper. Pilasters and decorative treatment along the upper limits of the structure add to its attractive appearance. All window sash are of steel with bull-nose blocks at the openings. The floor is concrete paved. New equipment is to be installed as soon as it becomes available.

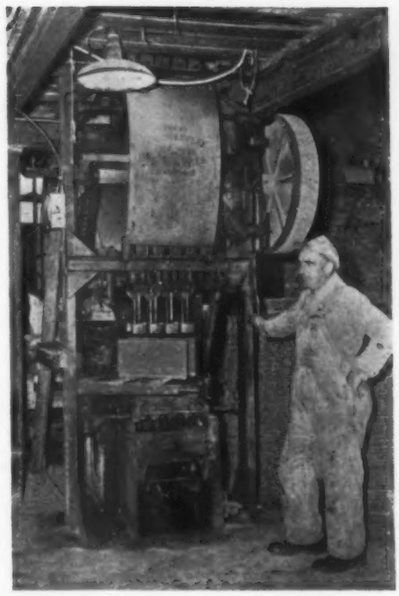
At High Point, North Carolina Tri-City Dunbrik, Inc., began producing concrete bricks in a new plant. Airfields and an arsenal in Texas took much of the output turned out by the new plant of the Durocrete Block Company at San Antonio. The Quintel Concrete Products Company, Detroit, completed its new and modern plant begun in 1941.

The Birmingham Slag Company in 1941 took over a concrete-products plant at Ensley, Alabama and this was rebuilt and enlarged during the winter. Early in 1942 new concrete-products plants were also completed at the company's slag plant at Alabama City and at the crushed-stone plant of the Stockbridge Stone Company, a subsidiary, at Stockbridge, Georgia. Each of these plants has the latest model Besser Vibrapac block machine equipped with offbearer, automatic pallet oiler, etc. The Stockbridge plant was built to use up large quantities of waste stone fines and is well situated to supply the huge war-construction program under way in the Atlanta area.

The Universal Concrete Pipe Company, Columbus, Ohio added to its chain of concrete-pipe plants. Among the new production centers for Universal are Waco and San Antonio, Texas, Sedalia, Missouri, and Parkersburg, West Virginia. The last-named plant, which went into production in April, 1942, makes all sizes from 10 to 60 inches in diameter. A McCracken Model T pipe machine was installed in the new plant of the Charleston Concrete Pipe Company, Charleston, West Virginia. The Illinois-Wisconsin Concrete Pipe Company, operating at South Beloit, Illinois placed its second McCracken machine in pipe-production service. The new unit was also a Model T machine of the latest type.

At Henderson, Kentucky the Kentucky Concrete Pipe Company erected a new plant building 70 feet wide and 210 feet long to house its pipe-manufacturing equipment. The Thomas Concrete Pipe Company of Oklahoma City, operating a chain of plants in Oklahoma and Texas, opened its fifth plant at Kingsville, Texas.

In Washington, D. C., an extremely active building market, The Hudson Supply & Equipment Company installed its fourth large Stearns (No. 9) Joltcrete. In Muskegon, Michigan, the Certified



Sherman Cumerford and new 8-bar temper installed in plant of La Porte Cement Products Company.

Concrete Company Inc., found that industrial-plant expansion required a larger volume of blocks (which they had been producing on a Model 7 Joltcrete) and they added a Model 9.

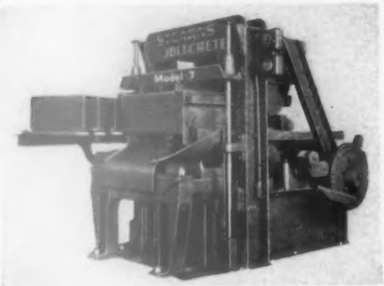
Activity in residential and warehouse construction in Green Bay, Wisconsin, led William Van Ess to install a No. 7 Joltcrete and similar installations were made by The Hydraulic Company, Council Bluffs, Iowa to supply masonry units for war construction and by The Standard Concrete Pipe Company, Springfield, Illinois, where this leading pipe operator has handled large defense housing jobs.

Important war construction dictated the purchase of a Stearns Clipper stripper by the Wahoo Concrete Product Company, Wahoo, Nebraska. Stearns Clippers were installed also in plants of the Platte Valley Concrete Pipe & Block Co. at Fremont, Scott's Bluff and Kearney, Nebraska. All these plants are crowded with war plant work.

The Comac Builders Supply Company of Rochester, New York added equipment for the production of concrete floor joists and cast-stone products. A Besser Vibrapac machine was installed in the plant of the Concrete Products Company, Jackson, Tennessee as its chief production machine. The Loomis Coal & Supply Company of Akron, concrete-products and ready-mixed-concrete operator, added lightweight units to its line.

Clair Halderman, North Baltimore, Ohio and the LaPorte Cement Products Company, LaPorte, In-

The Vibration Machine Supreme

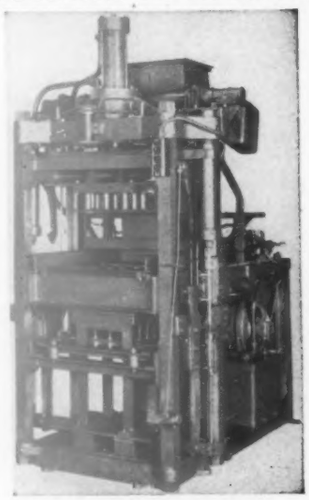


Vibration under pressure — 7,200 blows per minute—and ruggedly built to give long life, the Joltcrete machine is the choice of the wise concrete-products operator. Produces clean-cut, high strength units in any size, and gets the most out of a bag of cement. Built in three sizes with capacities of 7 to 9 standard units per minute.

Hobbs block machines, Anchor tampers, Anchor Jr. strippers, Stearns power strippers and Joltcrete, Stearns mixers and Cast Iron and Press Steel pallets, Straublox oscillating attachments, etc. Repair parts for: Anchor, Ideal, Universal, Stearns, Blystone mixers and many others.

ANCHOR CONCRETE MACHINERY CO.
G. M. Friel, Manager — Columbus, Ohio

Why not BUY
the LATEST
FASTEST
and BEST
PRODUCTION BLOCK MACHINE



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KENT MACHINE CO.
Cuyahoga Falls, Ohio

diana improved production facilities by the installation of Multiplex power-operated strippers. Keilman Brothers, Dyer, Indiana took delivery on a Besser Super Vibrapac which they are planning to place in active service early in 1943.

The Keystone Material & Equipment Company was organized at Fort Wayne, Indiana in the summer of 1942 to engage in the manufacture of concrete products.

A Multico automatic block machine powered by compressed air and combining tamping, vibration, and pressure to form the units was added at the plant of the Cecil Concrete Block Company in Detroit.

Dienhart Now Executive Secretary of N. C. M. A.

John L. Strandberg, president of the National Concrete Masonry Association announces the appointment effective January 1, 1943, of E. W. Dienhart as executive secretary. Mr. Dienhart will devote his full time to the management of the organization. The principal activities of the organization will be directed toward coöperation with various government agencies in gearing the concrete-masonry-unit industry as an important wheel in the war-construction program. Special problems confronting the industry occasioned by the war will be given major consideration.

Mr. Dienhart is well known to the concrete-products industry, having devoted the past 24 years to promotion and research activities in various capacities. Most of his business career has been in the service of the Portland Cement Association.

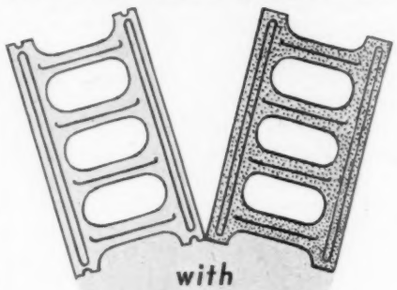
Temporarily, offices will continue to be located at 33 West Grand Avenue, Chicago.

Fire-Drill Tower Is Built with Concrete

A 44-foot concrete-block tower, designed to facilitate the training of auxiliary firemen called into service as part of the civilian defense program, was formally dedicated in Mattoon, Illinois, recently. The tower is to be used for special drills by firemen and auxiliary firemen in towns and counties within a 50-mile radius of Mattoon.

Foundations and first floor of the tower are cast-in-place concrete. Upper floors are tile-joist concrete floor construction. The walls are built of lightweight concrete units.

YOU'RE PREPARED
for mass block production



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Cored Steel Pallets

The perfect pallet for vibrators or tampers. Fits the core box—no grinding or filing—easy to handle, no breaking, warping or cracking.

Blocks made on
Commercial Pallets
cure perfectly.

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THE COMMERCIAL SHEARING AND STAMPING CO.
YOUNGSTOWN, OHIO

SAUERMAN
Long Range
MACHINES

Handle MORE Tons for LESS Money

Almost any excavating or stockpiling job can be simplified by using a SAUERMAN Drag Scraper or Cableway.

These machines dig, haul and dump in one economical straight-line operation. Readily adaptable to varying digging conditions, they will move a given tonnage of materials in less time than any other machines of comparable price.

Because they require but a single operator, consume little power in operation, and require practically no maintenance, they cut costs to the bone.

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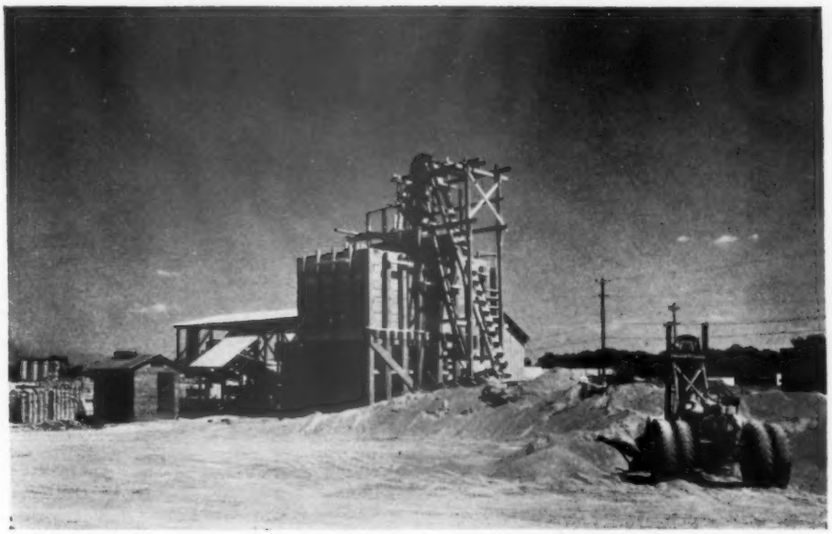
SAUERMAN BROS., INC., 534 S. Clinton St. CHICAGO

Housing Boom at Bustling Las Vegas Creates a Big Demand for Concrete



The concrete-block plant with tractor-loader at stock-pile.

another ON THE SPOT report

THE development of new industries vital to our vast war effort and the building of army camps, air bases, munitions depots, and similar projects in all parts of the country has caused a shifting of population exceeding that of any past migrations. This has brought with it many problems of which one of the most serious is the lack of proper housing facilities. Every possible effort is being made to supply these facilities as quickly as possible and much of this burden has fallen on the building-material producers in the areas affected.

In Las Vegas, Nevada a critical housing situation has developed for the second time in its colorful history. For many years Las Vegas has been a second Reno, fattening on marriages, divorces, gambling, etc., but it remained a small town until the construction of Boulder Dam was begun. The influx of workers and their families which resulted strained the local housing facilities and resulted in a building boom. After the dam was completed and most of this temporary population had departed Las Vegas returned to its former state. Then came the war and with it the huge Basic Magnesium plant, a huge gunnery school, and other war projects. The population, listed as 8,422 in the 1940 census, has more than tripled and the building boom is on again. An even greater influx of workers is expected when the magnesium plant is in full operation.

Anticipating these conditions, a group of men in January, 1941 incorporated Southern Nevada Industries, Ltd. to manufacture and deal in all kinds of building materials. These men were A. C. Grant, Al Cahlan and "Pat" Cline and they serve respectively as president, vice-president and superintendent. Working with them are Jim Henderson, general manager, and Bob Kaltenborn, secretary and treasurer. Their first step was to install a Hollostone block machine, and a few months later three 2½-cubic yard Smith concrete truck-mixers were added. Business in both lines expanded so rapidly that by November of 1941 two more Hollostone machines were installed and 12 new 4-cubic yard truck-mixers were added to the fleet. Eight of these are Jaegers and four are Chain Belt Rex mixers.

The aggregate bins of the concrete-block plant were temporarily used for batching into the truck-mixers but the growing demand for concrete soon made this impractical. In January, 1942 a new batching plant was built and its output has averaged more than 125 cubic yards daily.

When the construction of the magnesium plant was begun a batching plant was erected there. This plant has produced an average of 18,000 cubic yards of concrete per month for this project, which is expected to use a total of over 220,000 cubic yards. The twelve 4-cubic yard truck-mixers are kept busy on this project most of the time. Bulk cement is used at this plant and this is stored in a 500-barrel Madsen steel bin. Madsen aggregate bins and weighing batchers are also used and water is measured by Neptune automatic meters.

The batching plant at the yard is also a Madsen and it consists of a 90-ton aggregate bin with a 2-cubic yard batcher. The aggregates are discharged from a ramp to a bucket-elevator serving the bins. The bagged cement used is stored in a 12,000-sack warehouse near the

General view showing both the block and ready-mixed plants.

plant. The truck-mixers are loaded under the bins in a 4-foot-deep depression. This, one is surprised to learn, is just above the ground-water level, which is the reason why, even in this arid region, few buildings have basements.

The concrete-block department has also enjoyed a rapid increase in demand due mainly to several large projects. Up to September 1, 1942 over 1,700,000 blocks were sold, of which 90 per cent were the 4- by 8- by 12-inch size so popular in the west.

The largest order—for 500,000 units—was for the magnesium plant,

Weigh-batcher, scale and water meter in the ready-mixed-concrete plant.

where they were used for many buildings. including a hospital, and for fire and curtain walls. Interesting is the fact that, when the $300,000 wooden office building at this

Truck-mixer being charged at the batching plant.

project burned to the ground some months ago, the only things saved were those stored in a concrete-block vault which remained intact.

The Nevada Gunnery School took a total of 400,000 blocks and 350,000 went to the Nevada Biltmore housing project in the city. Another large order just completed was for 175,000 blocks for the Frontier Hotel, a 400-room luxury hotel and cabin development of a type found only west of the Rocky Mountains. Most of the other blocks produced went into individual houses and buildings of which hundreds more are now in prospect.

The block plant is a simple operation with a capacity of 13,000 units daily from the three machines. The sand and gravel aggregates are discharged from a truck on a ramp into a bucket-elevator which feeds through an adjustable spout into the three 40-cubic yard wooden bins. A volume batcher is used to measure the aggregates into the 1-cubic yard Smith drum mixer. The concrete is discharged on an inclined belt-conveyor which feeds, through split chutes, to the three Hollostone vibrating block machines. The finished blocks are deposited, on these pallets, on roller-conveyors from which they are pushed on three Hollostone pneumatic-tired carry-off carts. In the yard the blocks are covered and sprayed long enough to insure maximum strength.

About one-half of the sand and gravel used in the Las Vegas batch-

ALCAN Construction utilized hundreds of TRUCKSTELL Conversions of 1½ TON TRUCKS

DRIVING of the ALCAN highway through five weeks before schedule established new records—in international cooperation—in Army efficiency—in engineering and contracting ability—in unprecedented speed of road building against difficult conditions rarely encountered.

To meet the need for trucks "that could take it" dependence was placed upon hundreds of Ford Trucks *converted by the TRUCKSTELL method* into rugged, powerful, heavy duty units.

Each truck, engineered by Truckstell, was equipped with a THORNTON Four Rear Wheel Drive and a 4 to 6 cubic yard Anthony Dump Body.

Greatly increased traction gained by two driving axles instead of one—doubled gear speeds—and improved flotation—enabled these trucks to haul capacity loads through muck and mire and contribute substantially to the success of the project.

TRUCKSTELL pioneered the method of building "Little Trucks into BIG ONES." This system, now approved by Government officials, has produced thousands of trucks, some of which are operating on practically every Government project.

Investigate the TRUCKSTELL method of converting any make of medium truck into a complete heavy unit; also the different kinds of truck equipment available for meeting every need.

TRUCKSTELL CLEVELAND
UNION COMMERCE BUILDING
CONVERTERS of TRUCKS for EXPANDED USEFULNESS
DISTRIBUTORS of Tested and Approved TRUCK EQUIPMENT

ing and block plants has been produced by a small temporary plant; the other half has been purchased locally. This situation will soon be changed, as the company has purchased a tract of land 3 miles northwest of Las Vegas on the Tonopah highway on which it plans to build a $50,000 sand-and-gravel plant. Later the concrete and block plants may also be moved to this location as the property values at the present yard site are reaching a point where its further use for this type of industry is not justified.

Drum-type mixer in the block plant.

The new deposit is a wash of limestone gravel containing about 55 per cent. sand and very little gravel over 1½-inches in size. This wash is about 1,000 feet wide and 6 miles long and contains enough material for many years of operation. This material will be excavated and handled by a new ½-cubic yard Insley gasoline shovel which is being used at the old plant and one of two Model 125 Northwest cranes which are in use at the magnesium plant. A Case tractor equipped with a ½-cubic yard Hough loader, which is used for cleanup work about the yard, will also be transferred to the new location.

Dedicate Flagstaffs at Plant in Adrian

Two flagstaffs were dedicated last Armistice Day at the plant and offices of the Stearns Manufacturing Company, Adrian, Michigan, the impressive ceremonies being in charge of the American Legion. More than 200 Stearns employes witnessed the raising of the two flags. The factory, normally manufacturing concrete-products machinery, is now running three shifts producing important army equipment parts.

Blocks Used in Fences Surrounding Ford Plant

In any strategic area where considerable use has been made of concrete-block walls to protect vital industries against damage from sabotage or sneak gunfire, a natural sequence is the use of similar material to protect war industries.

While the exact location of war industries and details of protective measures are military secrets, it can be made known that a large number of concrete masonry units are being used for a fence around one of the Ford Motor Company plants in the Detroit area. Significantly, it is pointed out that a mile of fence built of concrete masonry, saves at least 12 tons of steel and 1 ton of zinc as compared with the traditional metal industrial fence.

Similar anti-sabotage protection is being erected around storage tanks at ordnance works in Texas and California; around electrical installations at a Pacific Coast airfield; and around an army cantonment at an unnamed point in California.

UNCLE SAM KNOWS HIS BRICKS . . .

Jackson Concrete Brick machines have been enlisted for government work. And for good reason. . . .

Jackson Brick machines are continuous in operation. They fill one pocket, compress one brick and remove one all at the same time. They produce up to 28,000 concrete bricks in an eight-hour day. They eliminate the need of costly pallets. Saw-blade steel lined pockets and high pressure curing insure a clean, sharp-edged brick.

For information regarding used units available, write to Jackson and Church Co., Saginaw, Michigan.

JACKSON AND CHURCH COMPLETE BRICK-MAKING PLANTS

JACKSON & CHURCH COMPANY • SAGINAW, MICHIGAN

You Can't Beat the Combination of

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"PULSATING MAGNET" VIBRATORS
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For Dependable Operating Efficiency
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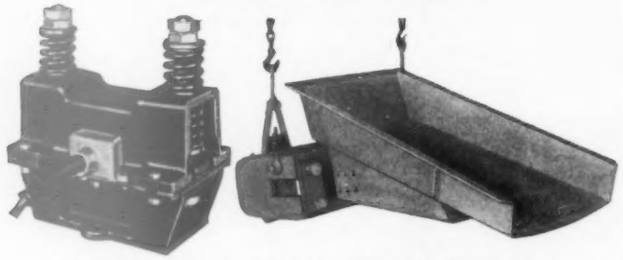

Vibrators on the bins to keep their contents Agitated and Free Flowing

Vibrating Feeders under the bins to regulate their discharge by rheostat control of Rate of Flow

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Strong, quickly erected, easily moved. Many capacities and conveyor arrangements. Pay for themselves in time and labor savings.

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For this dependable, non-crystallizing, long-wearing Screen Cloth with "Nat-Aloy" Lock Crimp Meshes.
"IT'S THE PEOPLE'S CHOICE"
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Stock shipments in all widths and all meshes. . . . Write for catalog No. 55.
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Today, you'll enjoy your stay at Hotel Lafayette more than ever! Extensively remodeled, and redecorated, this fine hotel offers new convenience and comfort—but the friendly hospitality is the same as ever. Excellent food, homelike rooms, reasonable prices. And remember: Hotel Lafayette is Buffalo's most centrally located hotel. Moderate rates: Single, $2.75 up; Double, $4.50 up; special rates for 4 or more. Write for Folder F-20.

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600 ROOMS each with bath from $3.00 up
RADIOS IN EVERY ROOM

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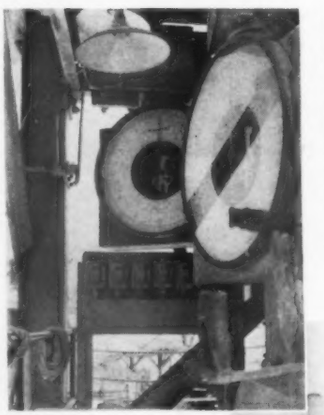
KRON Dial Scales

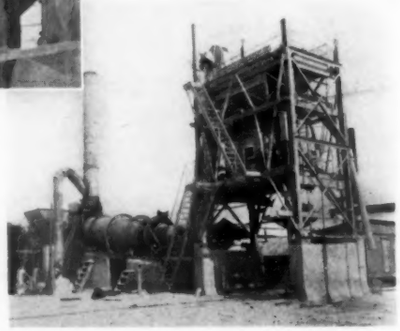


KRON Dial Scales in McDonald plant.

. . . . . check Production in Florida bituminized aggregate plant.

The McDonald Corporation of Brooksville, Florida, has operated a 50-ton per hour bituminizing plant for several years. This is equipped with a KRON Dial Scale to insure accurate proportioning.

In 1941 the McDonald firm erected a new 60-ton per hour plant to accommodate expanding military demands for airports and other military bases. The new plant is also KRON-equipped . . . one of the many repeat installations which is a tribute to the precision performance of KRON Scales.



The 60-ton per hour McDonald asphalt plant with mixer building in foreground.

KRON Springless Dial Scales are uniformly preferred by contractors on major federal, municipal, state and industrial projects throughout the country.

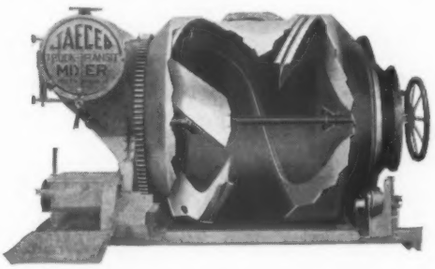
THE KRON CO., Bridgeport, Conn.

Now That War Regulations Limit the Building of New Truck Mixers

WE ANSWER 2 QUESTIONS ABOUT JAEGER TRUCK MIXER FLEETS

1. "HOW LONG CAN MY PRESENT TRUCK MIXERS LAST?"

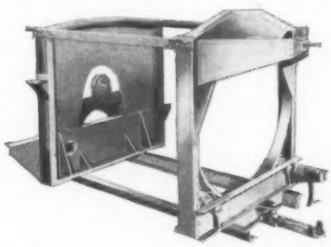
From the experience of hundreds of Jaeger fleet owners, over many years, it is safe to say that any Jaeger Truck Mixer, now in good condition, can be kept successfully in service for the duration of the war. Certainly, if given proper care and maintenance, your Jaeger Mixing Unit should easily outlast their present trucks.



Note that Jaeger's "Dual-Mix" Drum is self-cleaning — no pockets or corners to "build up" with concrete and require elaborate care or blade replacement.

Jaeger's Water System is simple, trouble-free. Clean out trap weekly. Give sensible winter care.

Jaeger's Transmission is shock-proof on all models; 2 speeds save engine wear. Lubricate at least daily.



The Jaeger Frame and 3-Point Mounting are time-tested — distribute weight to best advantage for long truck and tire life, prevent misalignment. All load bearing parts are of massive strength.

2. "WHAT WARTIME MAINTENANCE MEASURES DOES JAEGER RECOMMEND?"

Because of America's vital need for concrete and the fact that most equipment can no longer be replaced, your present truck mixers are literally priceless.

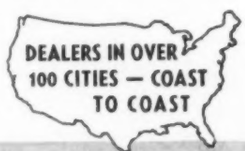
A. Make each of your operators responsible for his unit. Send for Jaeger Instruction Manuals and insist on careful operation and daily cleaning and lubrication as specified.

B. ARRANGE WITH YOUR JAEGER DISTRIBUTOR FOR A REGULAR 30-DAY CHECK-UP ON EVERY MACHINE.

This is your best insurance policy against breakdowns, long lay-ups and costly repairs. Jaeger service men know Jaeger mixing units just as your truck dealer knows his trucks.

Moreover, your Jaeger dealer carries thousands of repair parts in stock — as near to you as your telephone — to keep your mixers rolling. Back of him is our corps of Jaeger traveling engineers, on call to help Jaeger customers meet major problems of equipment maintenance or operation.

This nation-wide Jaeger organization is at your service. Use it to maintain *your own* service, so that you can help America to win this war.



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The CONCRETE MANUFACTURER

A type and size chain for every conveying, elevating and power transmission need. Peerless, detachable and steel knuckle are shown.

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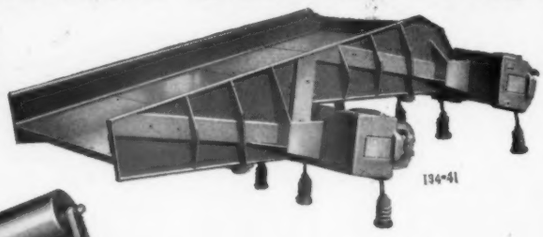
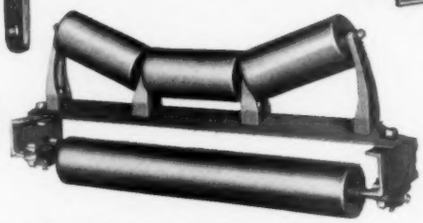
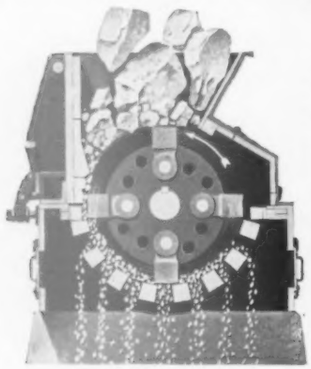
In handling quarry materials, of course you want economy, efficiency, and maximum freedom from costly and annoying maintenance problems. You get these in Jeffrey products, designed and manufactured for handling stone, gravel, sand, etc.





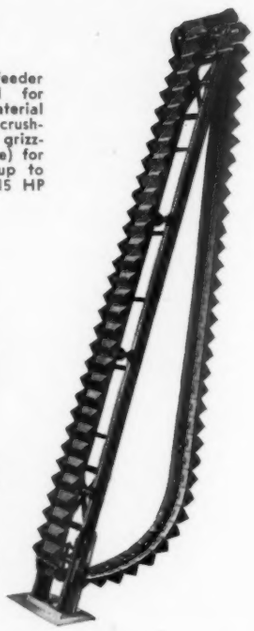
Jeffrey belt idlers are furnished in both troughing and flat belt types in widths from 14" to 60". Heavy steel rolls, accurately balanced and equipped with Timken tapered roller bearings.

Jeffrey-Traylor electric vibrating feeder (patented) J-T feeders ideal for handling large run-of-quarry material from surge hoppers to primary crushers, hammermills, trommels or grizzlies. Special large feeder (above) for handling 48" lumps at rates up to 2000 T.P.H. with maximum of 15 HP required.



Jeffrey-Traylor grizzly feeder (right) for by-passing fines ahead of primary and secondary crushers, screens, picking belts. Also electric vibrating screens and feeders (patented).

The Jeffrey Miracle hammer crusher (left) is used for reducing large pieces of limestone, shale, slag and cement rock. Steam shovel size to 1", 2", 3" or 4" and under in one operation.



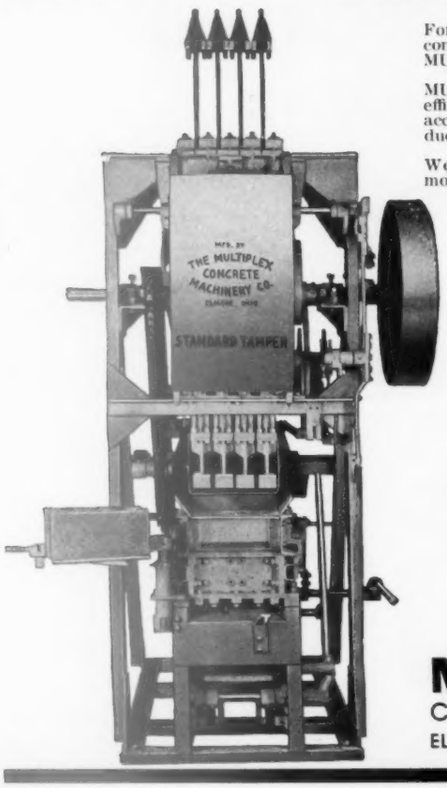
Operating conditions, capacity or class of material make no difference—there is a Jeffrey bucket elevator to do the job. A complete line of standardized units. An inclined continuous elevator is shown right.

THE JEFFREY MANUFACTURING COMPANY

917-99 North Fourth Street, Columbus, Ohio

Baltimore	Chicago	Detroit	Milwaukee	St. Louis
Birmingham	Cincinnati	Harlan	New York	Scranton
Boston	Cleveland	Houston	Philadelphia	Salt Lake City
Buffalo	Denver	Huntington	Pittsburgh	

MULTIPLEX Machines ★ A "Flying Start" in 1943!



For a Quick "Take-Off" and sustained pace in concrete block output, reserve one of the MULTIPLEX *high-speed* machines.

MULTIPLEX offers a wide variety of super-efficient mixing equipment, with all types of accessories necessary for economical mass production.

We can recommend MULTIPLEX units for modernizing *your* plant and enlarging its capacity.

★

Our universal type MULTIPLEX Standard Tamper for making plain and stripper, or face blocks, on one base. Easily convertible as business expands. Supplied with 4-bar or 8-bar tamper, either power or hand operated.

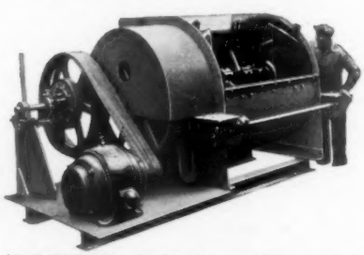
★

Write for Booklet describing the MULTIPLEX complete line of concrete mixing equipment, including Double and Single Hand Press Strippers, Power Press Strippers, and Super-Tampers.

★

MULTIPLEX
CONCRETE MACHINERY CO.
ELMORE • OHIO

The MULTIPLEX Flue Block Machine makes ventilated, solid or lightweight units, including all attachments for ventilator and stove pipe openings.



MULTIPLEX Multi-Mixer with reverse screw-type action insures fast and thorough mixing of every batch. Side, end or bottom discharge.

BUILT BY BUTLER: YOUR GUARANTEE OF TOP PERFORMANCE

READY MIXED CONCRETE PLANTS complete from conveyor hopper to discharge hose.

CENTRAL MIXING PLANTS engineered to fit the job.

SAND AND GRAVEL PLANTS from thirty tons to three thousand.

CONCRETE PRODUCTS PLANTS designed for modern methods.

BULK CEMENT PLANTS to fit every condition, for new installations and old.

BATCHING PLANTS to build America's vital highways and airports.

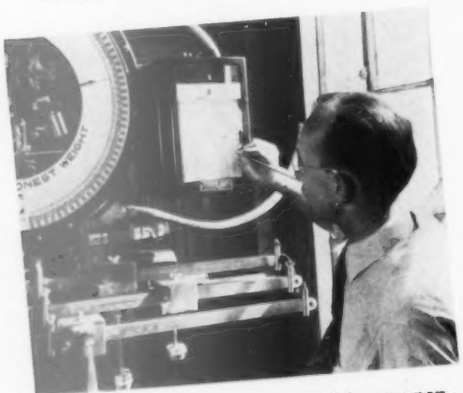
WEIGHING BATCHERS for all materials—fast, accurate, and efficient.

BIN GATES that are trouble-free and economical—for any bin, any material.

BUTLER BIN COMPANY • WAUKESHA WISCONSIN

IN POST WAR CONCRETE
COMPETITION WILL BE TOUGH

The (SC)² Moisture Meter. The only unit capable of determining moisture content in less than 1 minute.



The (SC)² Compensator which compensates for the moisture content in every ingredient and graphically records its every operation.

Start now to improve your competitive position

Sell Quality Concrete

(SC)² Precision Control will enable you to produce

Better Concrete at a Lower Cost

Without investing in expensive new equipment it will help you to hold and extend your market.

(SC)² Precision Control will give you:

A MOISTURE DETERMINATION, accurate to ¼% by weight, made in one minute; *one for every batch when necessary.*

AUTOMATIC COMPENSATION, for all ingredients, for every change in moisture content of aggregates. Delivers not only the correct total quantity of water but also the correct DRY weight of each aggregate within close tolerances.

PRECISION PROPORTIONING, by weight, of all ingredients, with electric cut-off where required, eliminating all human errors.

AN AUTOMATIC GRAPHIC RECORD, showing the delivered weight of all ingredients, and the moisture compensation made in each. An invaluable protection to both buyer and seller of concrete and a dependable aid to inspectors and engineers.

(SC)² CONTROL is used in progressive concrete manufacturing plants. Its precision mix assures rigid adherence to the engineer's specifications and produces *remarkable uniformity.*

Send for our booklet "PROFITS IN CONCRETE" and let us show you what (SC)² can do for your plant.

SCIENTIFIC CONCRETE SERVICE CORPORATION
McLACHLEN BUILDING, WASHINGTON, D. C.

SCIENTIFIC [SC]² CONCRETE

SCIENTIFIC CONCRETE SERVICE CORPORATION [SC]² WASHINGTON, D.C.

TRADE MARK REG U. S. PATENT OFFICE

[SC]² is to concrete as sterling is to silver

For Greater Capacity and More Accurate Sizing

Four 4' x 10' Double Deck Symons Screens in a stone plant.

One of two Symons Screens serving this gravel operation.

We are proud to fly the Navy "E" with the added star signifying that excellence in production has been maintained.

In hundreds of installations involving the screening of many different kinds of materials, HORIZONTAL Symons Screens are demonstrating their enormous capacity and accurately graded sizes. They are to be found in the larger stationary plants and also in many portable plants supplied by one of the prominent builders of this class of equipment in this country.

The unusual action of the Symons Screen quickly stratifies the material bed and readily releases the fines from the oversize. Since Symons Screens size more accurately, materials produced by them are of premium quality and meet the most rigid specifications. If you are confronted with the problem of greater output and better screening, investigate the advantages of Symons Screens.

NORDBERG MFG. CO.
MILWAUKEE WISCONSIN
NEW YORK · LOS ANGELES · LONDON · TORONTO

NORDBERG MACHINERY

SYMONS SCREENS

The Care and Feeding of Rock Crushers

No. 2 of a series of advertisements in the interests of national economy to aid users of crushing equipment unable to secure new units during the emergency.

Reverse Worn Jaw Plates for Maximum Service

Jaw plates are made reversible so they can be turned end for end when the lower end becomes worn. Jaw plates should be reversed as soon as they have become worn to a point of decreasing plant capacity —worn jaws will not grab and crush material. They cause material to slip and accelerate wear. Too, wear forms pockets at base of jaws preventing release of material and decreasing capacity. Cheek plates and wedges should be reversed, too (older models of equipment do not allow for this change) when jaws are reversed, for maximum efficiency and service.

UNIVERSAL ENGINEERING CORP.
Formerly the Universal Crusher Co.
619 C Avenue West
CEDAR RAPIDS, IOWA

WE ARE HELPING
ALL WAYS!

We signed up early for the 10% War Bond Purchase Plan; we are building rock crushers and equipment for surfacing air base runways and we are army ordnance contractors.

Repair or Replace Jaws When Both Ends Are Worn

Most worn jaw plates can be salvaged by build-up welding and the use of filler bars. Only a few inches of jaw plate should be welded at a time to avoid warping the parent metal. Be sure to use a good manganese steel welding rod, applied in accordance with maker's recommendations.

We will be glad to recommend suitable welding electrodes, filler bars and best salvage welding methods on receipt of details covering type and make of equipment, nature of material worked and welding equipment available.

You boost production when you keep corrugations at the lower end of the jaws—you conserve vital metal when you build up worn jaws.

UNIVERSAL

CRUSHERS, PULVERIZERS, COMPLETE PLANTS, SPREADEROLLERS, PORTABLE ASPHALT PLANTS

When your problem is—

TONNAGE—HORSEPOWER

Specify and Use QUAKER

Vital War production demands higher and continuous tonnage from the Sand, Gravel, Stone, Cement and kindred fields in aiding America's Victory Drive.

By equipping with Quaker Conveyor and Transmission Belting, you have the answer in this part, to step up War production. Quaker Belting has the quality to meet heavy or extreme service needed to "do the job".

9,000
QUAKER RUBBER PRODUCTS
BELTING • HOSE
PACKINGS
READY TO SERVE INDUSTRY

Give that "Belting Problem" and order to Quaker Engineers—they can help you save all vital materials—also offer and will be glad to suggest what can be used during this emergency.

U. S. A. has been given all right of way—we know you wouldn't want it otherwise—but your Industry, with a priority rating that is favorable, is being served with remarkable promptness.

FOR QUICK INFORMATION—SERVICE—HELP—LET US AID YOU

KEEP ON BUYING WAR BONDS AND STAMPS

QUAKER RUBBER CORPORATION

OVER 57 YEARS CONSISTENT QUALITY

PHILADELPHIA • *NEW YORK* • *CHICAGO* • *HOUSTON*

Western Territory

QUAKER PACIFIC RUBBER COMPANY • SAN FRANCISCO • LOS ANGELES

KENNEDY-

Stone Preheater and Deheater

IMPROVES

40% Savings in Fuel

LIME PRODUCTION AND QUALITY

20% Increase in Capacity

The KENNEDY Preheater and Deheater provides a complete answer to lime producers who want to combine the superior product of a rotary kiln with the operating economy of a vertical kiln.

This equipment effects a partial calcining of the material, thereby reducing kiln wear and kiln lengths.

The KENNEDY method recovers and utilizes exit gases, and has proved so efficient in actual operation that 40% fuel savings and increased output exceeding 20% have been recorded, as well as a better quality of lime.

KENNEDY-equipped kilns are free from overburning or underburning, and they also acquire a protective internal glaze which lowers power needs and has a tendency to prevent kiln ring formation.

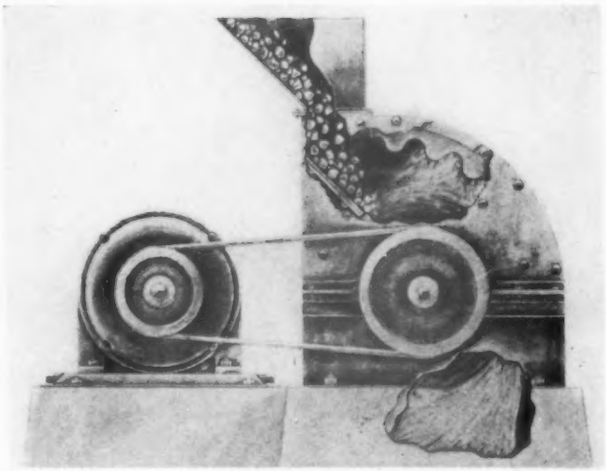
The KENNEDY Preheater and Deheater is fired by the KENNEDY Air-Swept Direct Firing Tube Mill System.

This system affords a simple, economical and efficient method of using pulverized coal in cement plants-lime-gypsum-power plants — and other industries where maximum heat is necessary.

KENNEDY-VAN SAUN MFG. & ENG. CORP.

-VAN SAUN

Crushing and Screening Equipment

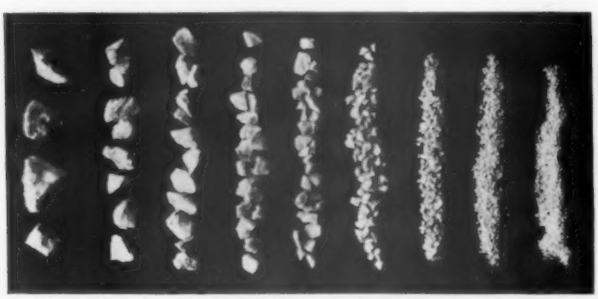


CRUSHER

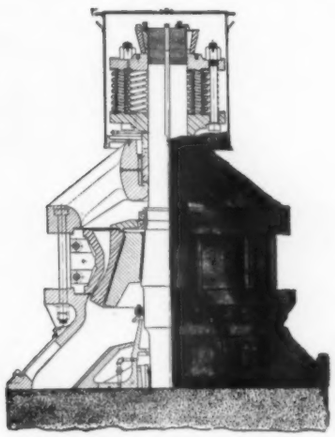
"KVS" 20-inch "Cuber" Crusher which provides a cubical product.

The Kennedy Cuber Crusher shown above produces small cubical material at low cost. The wearing parts are reversible, each hammer supplying four wears before renewal is necessary. Desired fines can be produced by regulating speed of Crusher.

Below is photograph of quartz crushed in Cuber Crusher operating at 850 R.P.M. and consuming about 20 H.P.



Material produced by Cuber Crusher.



GEARLESS CRUSHER

Kennedy Gearless Crushers are built in primary and secondary types. Products from Kennedy Secondary Crushers are small and uniform in size and can meet practically any tonnage or sizing requirements.

DOUBLE DECK SCREEN

"KVS" Vibrating Screen for finely sizing material. We manufacture screens in various sizes.

Write for Bulletins on our complete line of material processing machines.

2 PARK AVENUE • NEW YORK, N. Y.

Higher Capacities in the... SUPER-FINE RANGE

Raymond Double Whizzer Separator. Also made with Single Whizzer.

Raymond 30-Inch Air Separator for small commercial work or laboratory use.

The Raymond DOUBLE WHIZZER

— Mechanical Air Separator —

This is the *modern design classifier* you need in your production line for meeting today's strict specifications and greatly increased output of powdered materials.

The double whizzer action . . . a Raymond feature . . . gives sharper selection of the fines than usually obtained. The result is:— More uniform finished materials, cleaner tailings and higher capacities.

There is closer control of particle size and the fineness can be regulated within wide limits by vertical slide dampers. In separating cement, you can produce the standard grades or high-early-strength cements, from 1800 to 2500 specific surface areas, by the slide adjustments alone.

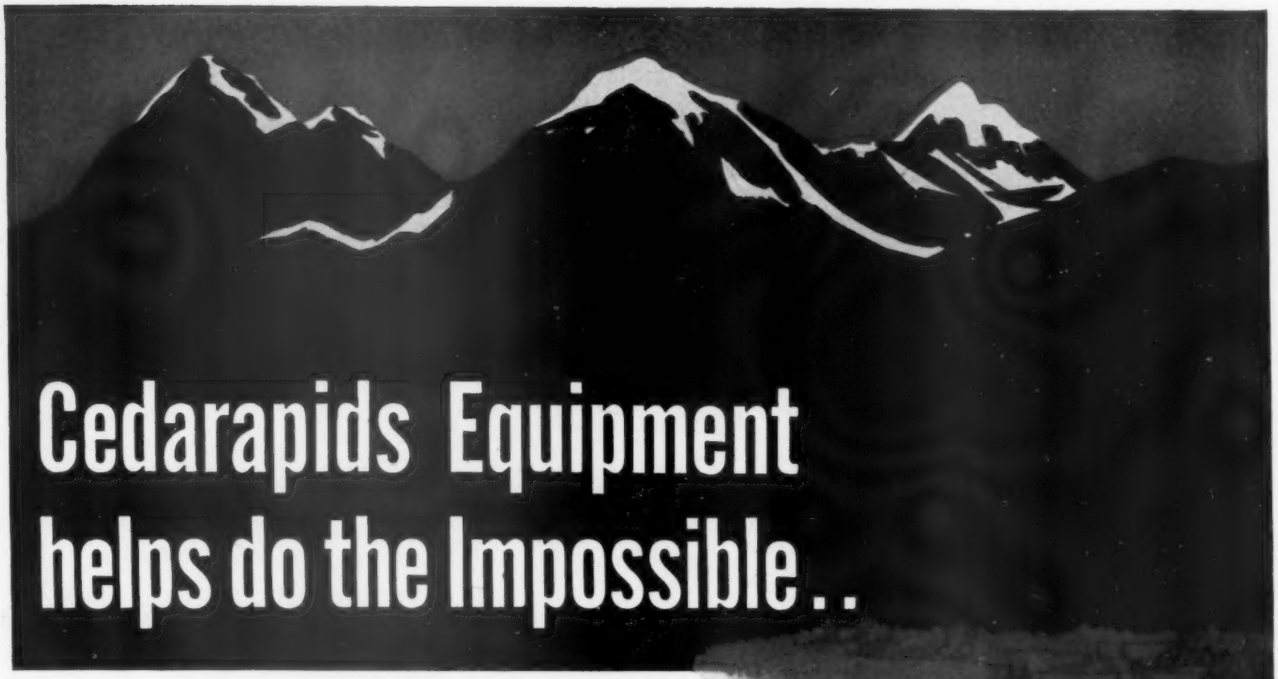
For classifying gypsum, limestone, clays, graphite, slate dust, silica, talc, chemicals and many manufactured products, you can produce the commercial grades or extremely fine "material" with maximum economy when using the Raymond Separator.

Raymond Laboratory Air Separator for experimental or test separations.

Built in Nine Sizes: from 2' 6" to 18' 0" diameter.

RAYMOND PULVERIZER DIVISION
COMBUSTION ENGINEERING COMPANY, INC.
1321 North Branch Street CHICAGO
Sales Offices in Principal Cities • • • In Canada: Combustion Engineering Corporation, Ltd., Montreal

SINCE 1887



Cedarapids Equipment helps do the Impossible..

on the toughest highway job ever undertaken

The Alcan Highway! Its completion is another case of accomplishing the apparently impossible. We are proud—and we know the Contractors and the War Department are grateful—that Cedarapids Morok and Junior Tandem portable crushing plants had the performance ability to meet the speed, tough conditions, and rigid specifications of this great job.

for your aggregate-producing needs

Investigate the superior feeding, crushing, screening, truckloading and portability features of Cedarapids Tandem Plants. Models to meet all conditions. Also write for complete information about other Cedarapids equipment for stone-crushing, material handling, and asphalt-mixing.

Cedarapids

Master Tandem portable crushing plant for gravel or rock. Big capacity. Low-cost operation. Drives without chains or sprockets.

Made by IOWA MANUFACTURING COMPANY • Cedar Rapids, Iowa, U.S.A.

FOR OUR ARMED FORCES

INDUSTRIAL AMERICA HAS PLEDGED

ALL-OUT AND EVER-INCREASING PRODUCTION

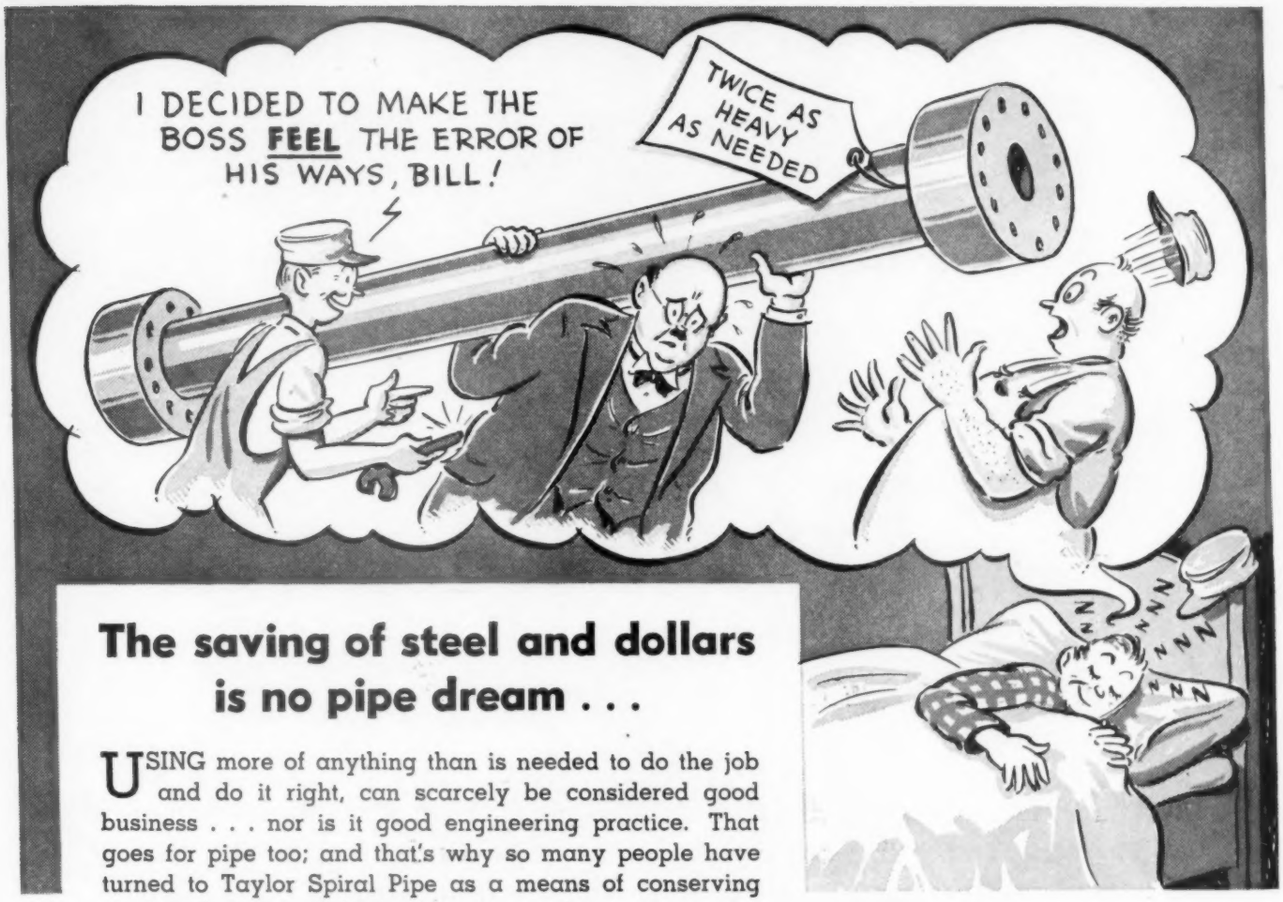
FOR OUR ARMED FORCES

—THAT THEY MAY QUICKEN THE DAY OF VICTORY

—THAT THEY MAY RETURN IN SAFETY

—AND THAT THE WORLD MAY BE ASSURED

OF A LASTING PEACE



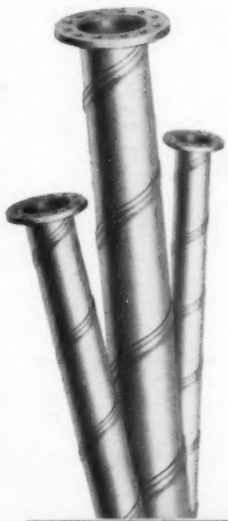
The saving of steel and dollars is no pipe dream . . .

USING more of anything than is needed to do the job and do it right, can scarcely be considered good business . . . nor is it good engineering practice. That goes for pipe too; and that's why so many people have turned to Taylor Spiral Pipe as a means of conserving steel and saving dollars.

Just to illustrate the point take 10-inch Standard Thickness Pipe as an example. Here is a pipe with rated bursting strength of nearly 3000 lbs. per sq. inch. Yet you see it used for a hundred and one low or moderated pressure services like those listed opposite. Taylor Spiral Pipe, weighing half as much as Standard Thickness Pipe, has proved in countless installations that it can handle such requirements with strength and service life to spare. Yes, and handle them in many cases at about *half* the installed cost of Standard Thickness Pipe.

The complete range of sizes and the wide variety of fittings available, make it practical and easy to carry out this idea with Taylor Spiral Pipe. Thicknesses range from 18 to 6 gauge; sizes from 4" to 42"; joint lengths up to 40 ft. All types of end joints and couplings, all kinds of fittings and "specials" or fabricated assemblies are produced by Taylor Forge, assuring a complete service and undivided responsibility.

Today Taylor Spiral has more than the saving of dollars to recommend it. Switching to Spiral now means conservation of vital steel.



Change to TAYLOR SPIRAL PIPE FOR:

- High and Low Pressure Water Lines.
- Low Pressure Steam and Air Lines.
- Steam and Diesel Exhaust Lines.
- Vacuum and Suction Lines.
- Blower Piping.
- Sand and Gravel Lines.
- Industrial Gas Lines.
- Oil and Gas Gathering Lines.
- Swing Pipe.
- Spray Pond Piping.
- Hydraulic Mining.
- Dredge Lines.

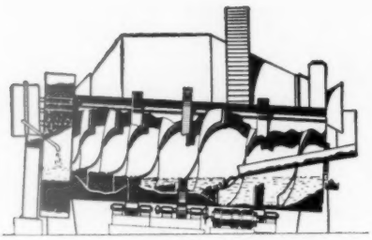
TAYLOR FORGE & PIPE WORKS

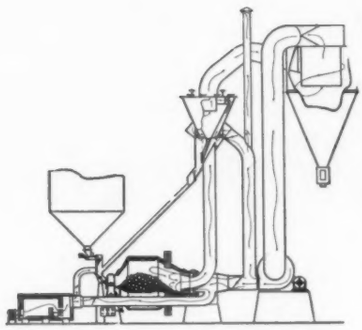
General Offices & Works: Chicago, P. O. Box 485
New York Office: 50 Church Street
Philadelphia Office: Broad Street Station Building

TAYLOR *Spiral* PIPE

Wet versus Dry Grinding

A Few Facts Most Mill Users Do Not Know!





1. Do you know that power to grind wet is less than to grind dry but this advantage may be more than offset by the very low ball and liner consumption of the same mill grinding dry?

2. —or that you can secure a better graded product when grinding dry?

3. —or that you can dry and grind simultaneously?

4. —or that if the product is to be acid treated, leached, or if water is scarce, dry grinding may be preferred?

5. —or that some physical or chemical action grinding dry has, in many cases, increased extraction?

6. Do you know that when grinding wet, in closed circuit with the Hardinge Counter-Current Classifier, you have a positive control of your fineness and that the Classifier maintenance is next to nothing?

7. —or that a short cylinder Conical Mill grinding either wet or dry eliminates dead zones, thus increasing grinding rate and insuring a close control of sizing.

Write for Bulletins 13-D, 39 and 41

HARDINGE

COMPANY, INCORPORATED - YORK, PENNSYLVANIA

122 East 42nd Street, New York, N. Y.
205 West Wacker Drive, Chicago, Illinois
501 Howard Street, San Francisco, California
200 Bay St., Toronto, Ontario, Canada

B&W

PULVERIZERS

. . aid in getting cement to the front line of Industry

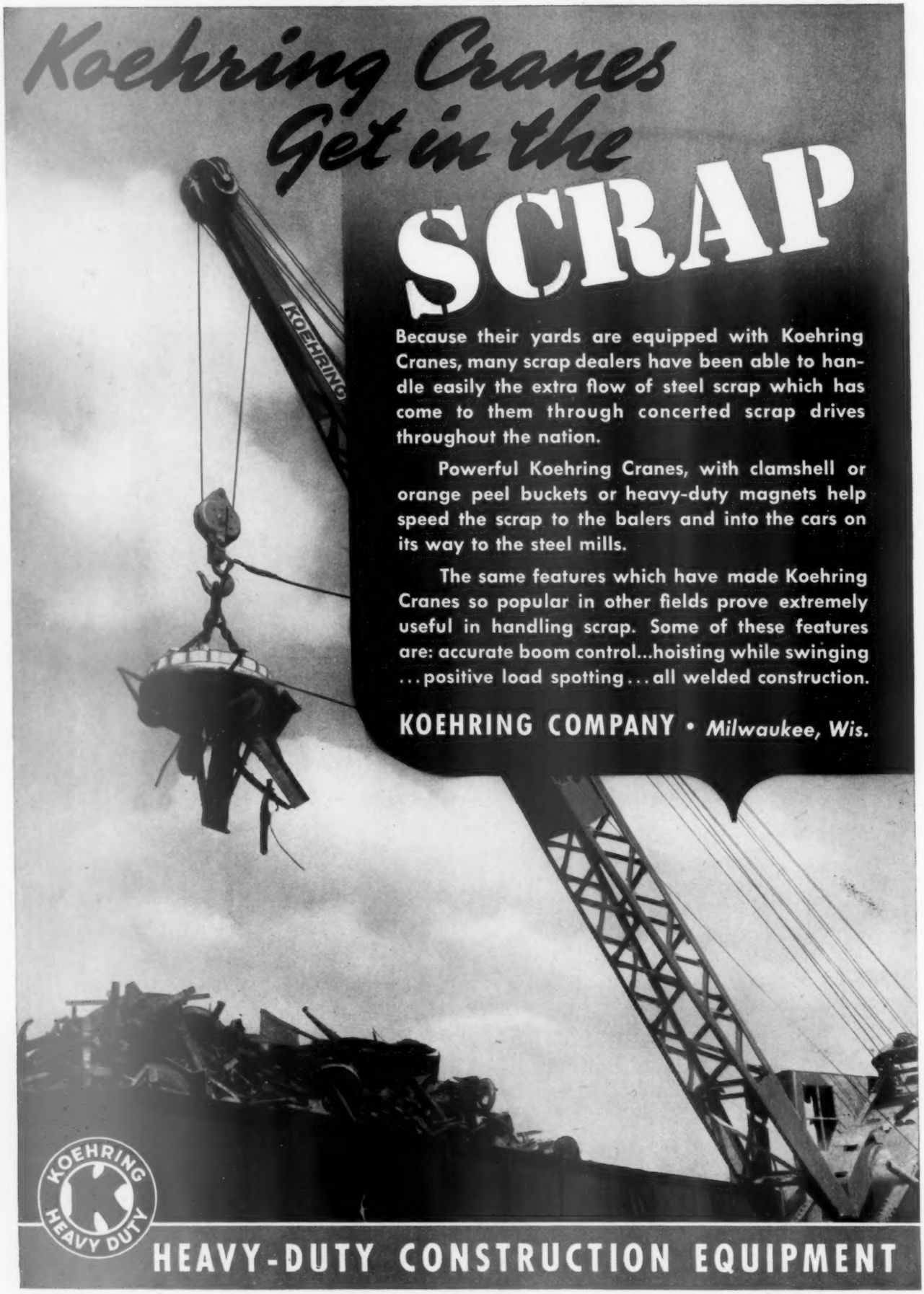
High availability is now one of the most important factors in the war effort — whether in man power, machine tools, ships, or pulverizers.

B&W Pulverizers, with a high availability record, are now definitely helping cement men to attain maximum output. C-49.

BABCOCK & WILCOX

THE BABCOCK & WILCOX COMPANY

85 LIBERTY STREET, NEW YORK, N.Y.


Koehring Cranes
Get in the
SCRAP
KOEHRING
Because their yards are equipped with Koehring Cranes, many scrap dealers have been able to handle easily the extra flow of steel scrap which has come to them through concerted scrap drives throughout the nation.
Powerful Koehring Cranes, with clamshell or orange peel buckets or heavy-duty magnets help speed the scrap to the balers and into the cars on its way to the steel mills.
The same features which have made Koehring Cranes so popular in other fields prove extremely useful in handling scrap. Some of these features are: accurate boom control...hoisting while swinging ...positive load spotting...all welded construction.
KOEHRING COMPANY • Milwaukee, Wis.
KOEHRING
HEAVY DUTY
HEAVY-DUTY CONSTRUCTION EQUIPMENT

Elevator Buckets
All Types — All Sizes
Light and Heavy Steel Plate Construction
Hoppers — Chutes — Casings

HENDRICK MANUFACTURING CO.

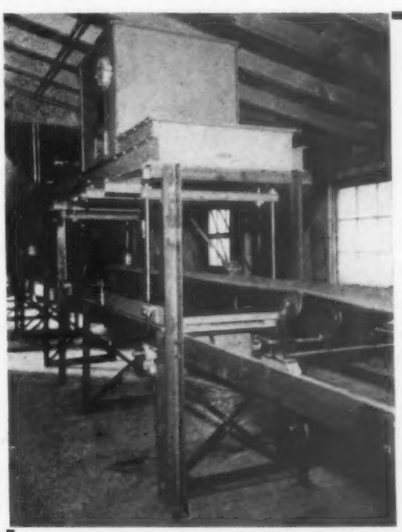
47 Dundaff Street, Carbondale, Pa.

Branch Offices in Principal Cities—Consult Telephone Directory

Makers of Hendrick Perforated Metals, Hendrick Mitco Shur-Site Treads, Hendrick Mitco Armorgrids

SPEED
WAR ORDERS
With Screens of Hendrick Perforated Plate

On vibrating, revolving, or shaking screens, the long wearing qualities of Hendrick Perforated Plate gives maximum service. It is available in any size or shape of perforation, single or double corrugation, flat or rolled to any diameter. The uniform mesh is maintained for the life of the screen and full clearance prevents clogging.



WEIGHTOMETER

is widely known and accepted by producers who handle lime, cement, sand, or other bulk materials by belt conveyor.

This *precision machine* provides a continuous, automatic and accurate scaling record of materials in transit at greatly reduced cost.

In thousands of installations, WEIGHTOMETER has proved its ability to supply an economical and dependable check on materials in production.

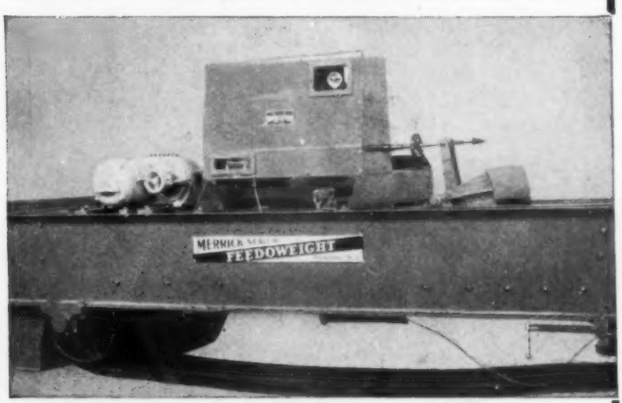
Write for Information

Fast weighing of materials in transit by

MERRICK SCALES

will help to speed up production in 1943

IT'S MERRICK FOR DEPENDABLE ACCURACY



FEEDOWEIGHT is the modern, automatic, continuous type feeder scale that weighs, totals and records the amount of material being fed. Power-operated feed and control-gate insure correct proportioning. Feeds two or more materials in continuous or batch feeding, using corresponding number of Feedoweights.

MERRICK SCALE MFG. CO.
Automatic Continuous Weighing Machines
PASSAIC NEW JERSEY

The center of attention • **SOBEK-KUNTZ LIME KILN** • in the lime industry

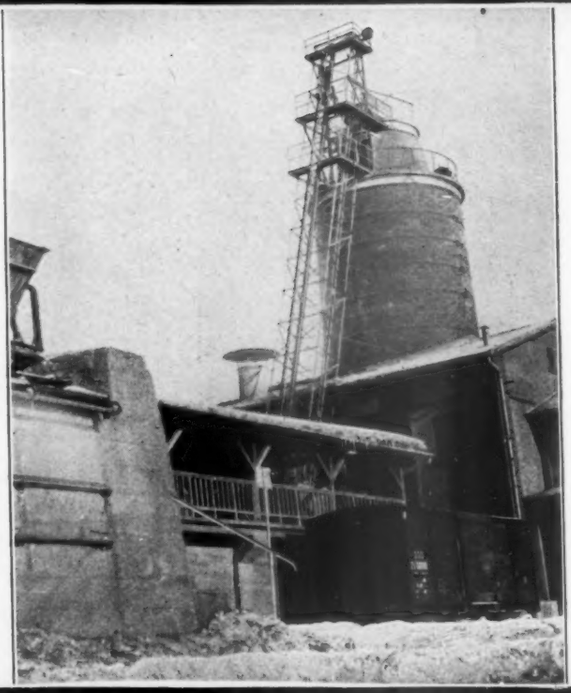
"EYES RIGHT!"

—that's the SOBEK-KUNTZ Automatic Shaft lime kiln, the main unit in a spot-lighted, super-efficient lime burning system.

Producers who adopt the "S-K" method are completely equipped for high capacity lime output on an economical basis.

ONLY "S-K" includes these features for speeding up production: simplified design and compact kiln for easy installation . . . center firing and center draft . . . patented firing and discharge mechanisms that insure a continuous operating cycle.

Consult our engineers for advice in modernizing your present equipment.



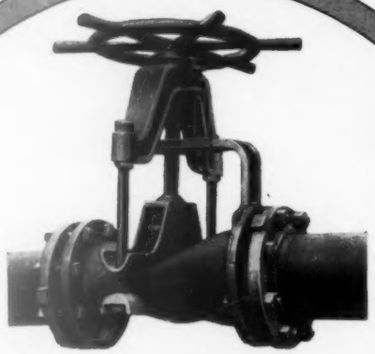
Capacities:

30 to **250** tons per day of 24 hours, with only two men per shift.

Available in 4 sizes

Write for Information

LIME & HYDRATE PLANTS CO. — ASSOCIATES — McGANN MANUFACTURING CO.
YORK, PENNSYLVANIA



These valves can be used in locations exposed to freezing weather, whereas frost causes trouble with metal valves.

●With certain modifications Massco-Grigsby Valves are acid-resistant and can be used on oily liquids.

SIZES: *1", 2", 3", 4", 6", 8" and 10", inside diameter*

For ABRASIVE or CORROSIVE PULPS and LIQUIDS

MASSCO-GRIGSBY PINCH VALVES

Wherever abrasive or corrosive liquids must be moved, these valves are finding wider and wider use. They are needed in ore milling, cement plants, dredging and many industrial operations where severe wear makes frequent replacement of metal type valves too expensive.

The body of the Massco-Grigsby Pinch Valve is made of special molded rubber reinforced with fabric. In the 1", 2" and 3" sizes this sleeve withstands pressures up to 100 lbs. per square inch; up to 150 lbs. per square inch in the larger sizes. Due to special patented design, the sleeve does not crack or wear under frequent valve adjustments.

There is no wear on moving parts and no working parts contact the liquid or pulp. There are no packing glands. Resistance to wear is substantially greater than on the metallic interior parts of gate or plug valves. The sleeve wears evenly; complete shut-off even on coarse particles because the rubber compresses around the particles.

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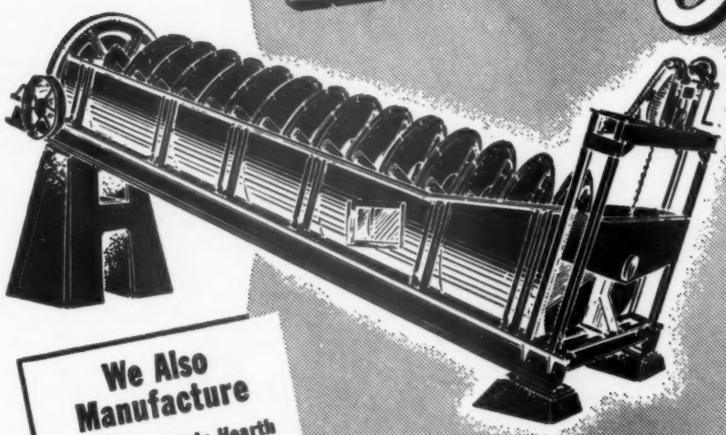

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ARE BITING INTO FROZEN GROUND and TROPIC MUCK

●Williams Buckets are very much in active service in the wide-flung war offense. Concrete-hard, frozen ground is being broken by the sharp teeth of Williams Buckets in far north road building. Deep in jungles Wellman Buckets are digging and dredging. At ore mines, over stock piles and railway cars, and in steel mills Williams Buckets are literally moving mountains to help beat the Axis.

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Inefficient and expensive SEPARATION can become a costly bottleneck in your production schedules! Today demands the increased *production,* the greater UNIFORMITY, wide range and the low costs that the GAYCO Separator will bring to your processing. The Gayco actually gives 25% to 30% greater recovery of fines; clean tailings; range from 80 to 400 mesh. GAYCO Engineers are ready now to show you how *it can be done.* Just check and send the Coupon—or write a letter.

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Bone Ash	Kieselguhr	Sugar
Coal Coke	Litharge	Sea Moss
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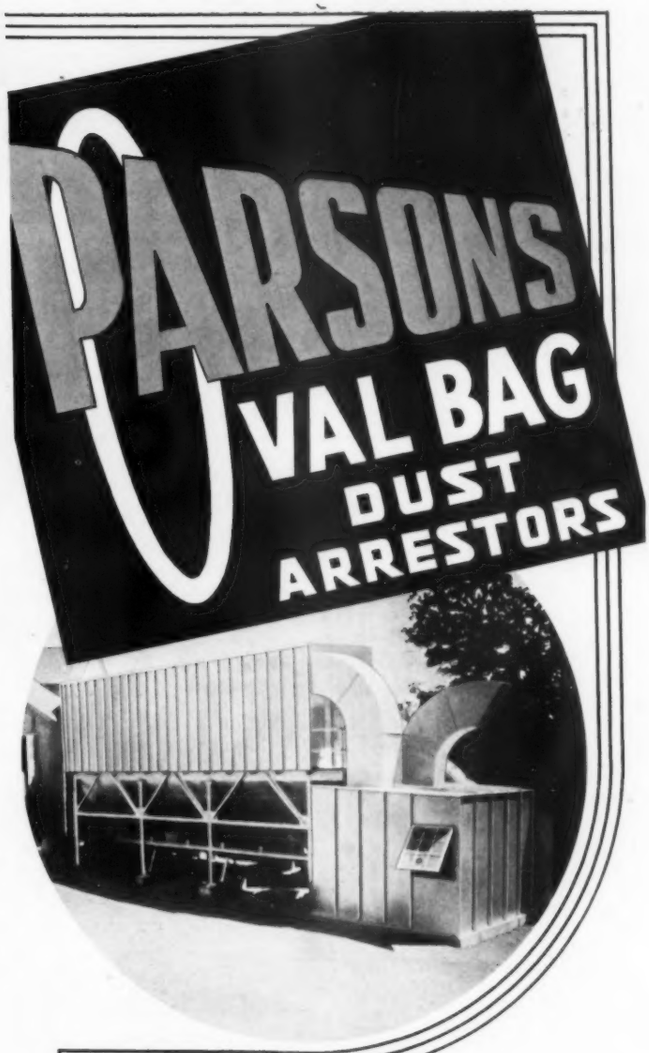

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PARSONS ... a name which means over a quarter of a century of specialized engineering experience in dust control.

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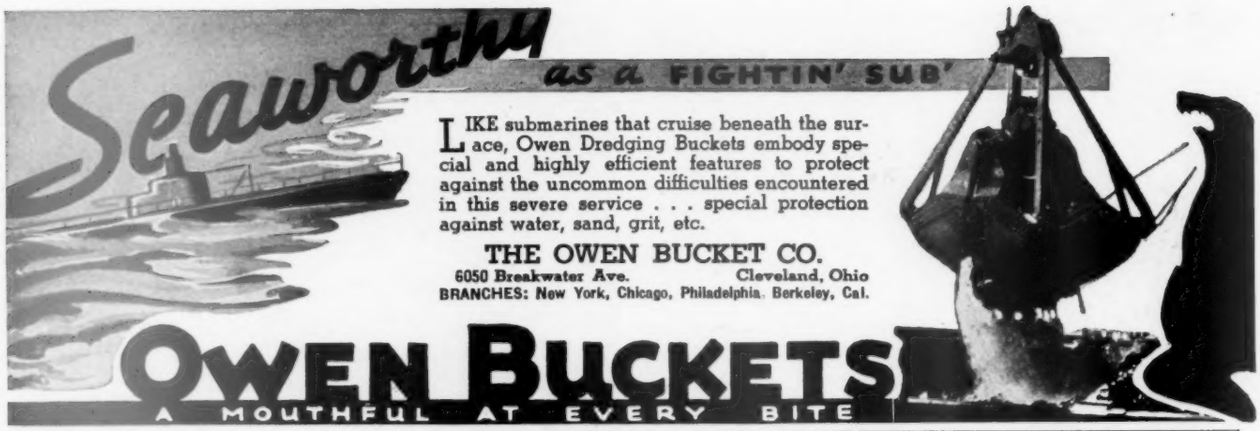

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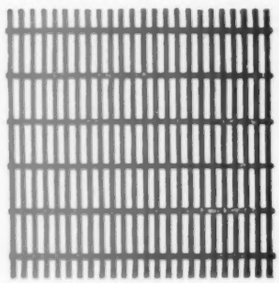

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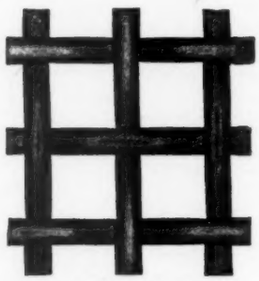
Available in Square Mesh and Rolled Slot. A trial will convince you of the superiority.



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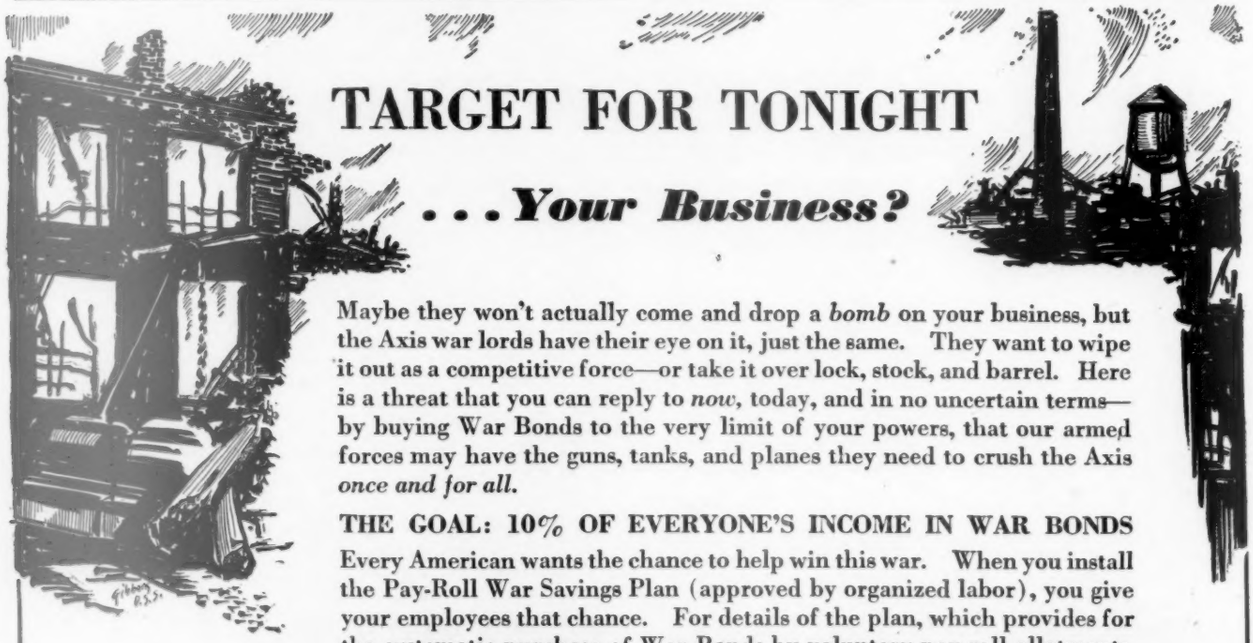

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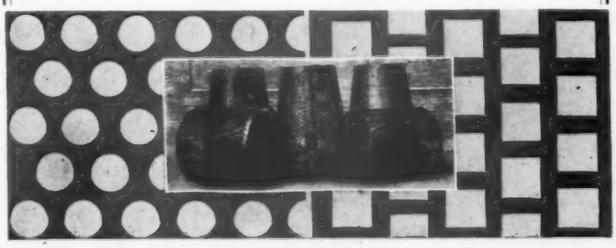
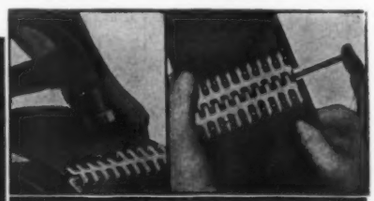


BELT LACING and FASTENERS for transmission and conveyor belts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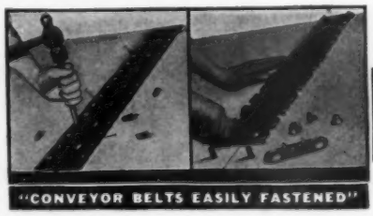
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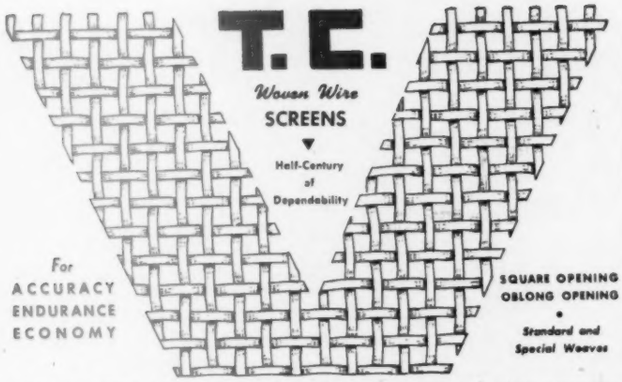

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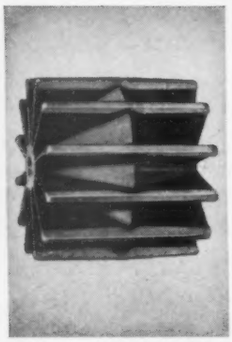

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THE LIFE OF CONVEYOR BELTS!

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The Lightning
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(Ball-Bearing)
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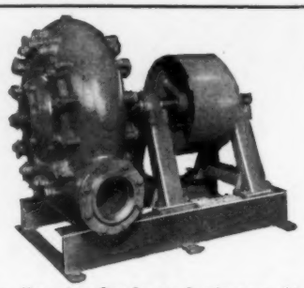

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Replacement parts made to jig standards and always fit and always available.
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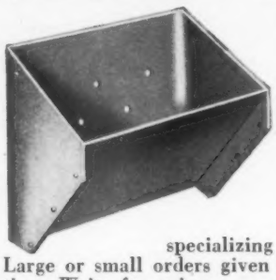

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for smooth, fast operation. Increases production at no extra cost.

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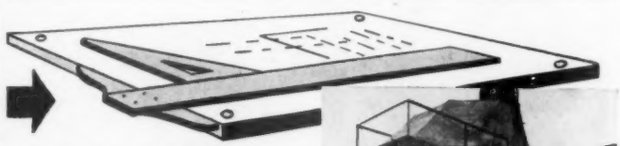

ON THE BOARD
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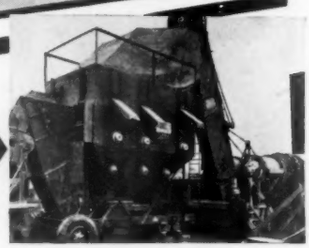

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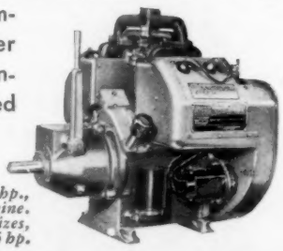
In the development of new equipment, as well as in the efficient utilization of existing machines . . . the power factor is more important today than ever before. That's why Wisconsin Heavy-Duty Air-Cooled Engines rate *Number One Consideration.*



Model VE-4, 22 hp., 4 cyl., V-type Engine. Other types and sizes, 1 and 4 cyl., 1 to 35 hp.

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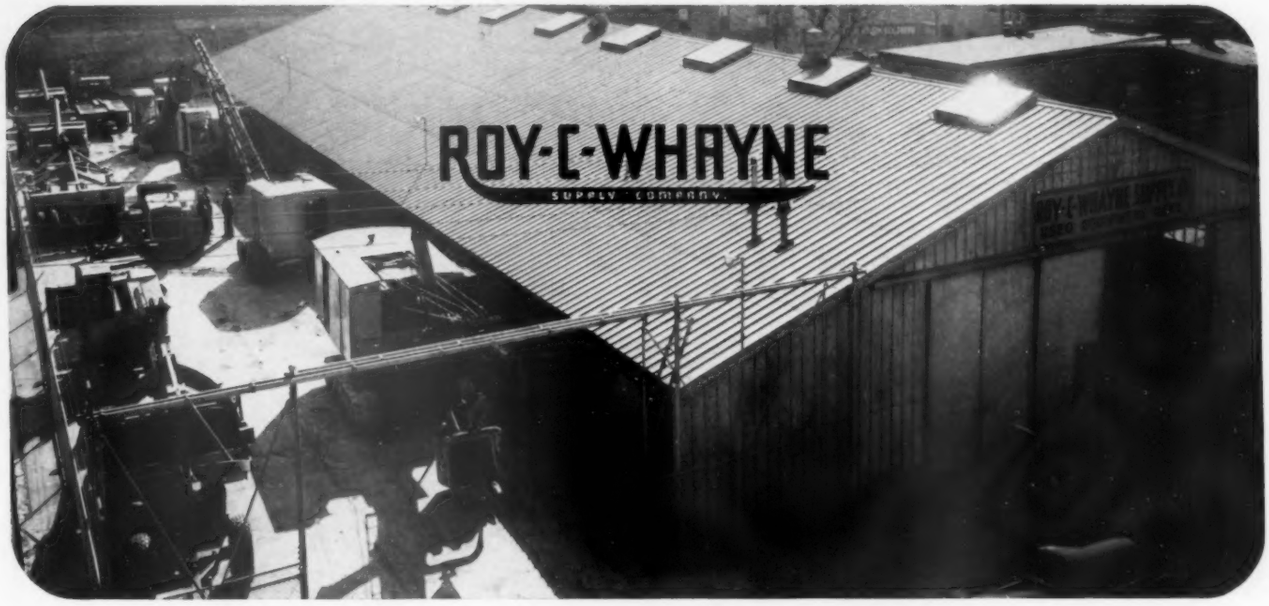
World's Largest Builders of Heavy-Duty Air-Cooled Engines



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1—**GENERATOR SET**, Rebuilt, 70 KVA General Electric Generator, 3 phase, 60 cycle, 230 volt with exciter and rheostat, direct connected to new Model 6DH-691 Buda, 6 cylinder Diesel Power Unit, with electric starter and battery; all mounted on steel channel base.....**$4342.00**

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1—**GENERATOR SET**, Rebuilt, 30 KVA General Electric Generator, 3 phase, 60 cycle, 240 volts with exciter and rheostat, direct connected to new Model 4600G "Caterpillar," 6 cylinder Gasoline Power Unit; all mounted on steel channel base **$2689.00**
The above engine can be equipped to operate either on natural gas or gasoline.

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2—**GENERATOR SETS**, Rebuilt 12.5 KW Allis-Chalmers direct current Generator, 125 volt, with rheostat, direct connected to new Ford Ferguson, 4 cylinder Gasoline Power Unit with electric starter and battery; all mounted on steel channel base .....**EACH $924.00**

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ALSO, LEASES ARE EXPIRING DAILY ON OUR LARGE STOCK OF RENTAL EQUIPMENT, CONSISTING OF TRACTORS, SCRAPERS, BULLDOZERS, SHOVELS, CRANES, COMPRESSORS, WAGON DRILLS, CONCRETE MIXERS, PUMPS, SHEEPFOOT ROLLERS, ELECTRIC GENERATORS, ONE COMPLETE CONCRETE PAVING OUTFIT WITH 34E DUAL DRUM PAVER—MANY ITEMS AVAILABLE IMMEDIATELY.

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1—**TRACTOR**, Crawler Type, Model Twenty-two "Caterpillar" gasoline powered, rebuilt..**$1000.00**

1—**PORTABLE BELT CONVEYOR**, Model BT14, Chicago Automatic with 14" belt with cleats, 20 feet long, powered by gasoline engine, rebuilt, A1 .....**$495.00**

1—**LOCOMOTIVE**, Plymouth, 8-ton, 36" gauge, Model BTU, powered by gasoline engine; operating condition **$1995.00**

1—**ROAD PUMP**, C. H. & E. Model No. 11 Triplex Road Pump, powered by 4 cylinder Waukesha, Model V121H Gasoline Engine; mounted on 4 steel wheels **$750.00**

1—**CONCRETE MIXER**, Model No. 10 DDKX Jaeger, equipped with water regulator, power loader, powered by 4 cylinder Gasoline Engine, mounted on 2 pneumatic tires.....**$950.00**

1—**SHOVEL**, Model 32B Bucyrus-Erie, 1 cu. yd. capacity, powered by gasoline engine; a real good machine **$11,750.00**
Have 45' boom for this machine..... **750.00**

1—**CRANE OR CLAMSHELL**, Model 206 P&H, ¾ yd. capacity, powered by 4 cylinder Gasoline Engine **$2500.00**

2—**SHOVELS**, Osgood, Crawler Type, 1¼ yd. capacity, powered by gasoline engine.
EACH $7950.00

1—**SHOVEL, CRANE COMBINATION**, Osgood, Crawler Type, 1 cu. yd. capacity, powered by gasoline engine with 60 ft crane boom...**$5000.00**

1—**TRENCHHOE ATTACHMENT**, for Thew-Lorain Model 55, ¾ or 1 yd. machine.....**$1600.00**

1—**SHOVEL FRONT**, for 1 yd. Osgood Shovel. **$750.00**

1—**SHOVEL FRONT**, Bucyrus-Erie for Model 10B, ⅝ cu. yd. capacity.....**$525.00**

1—**CURB AND GUTTER FORMS**, Heltzel, 600 ft., includes back rail, front rail, gutter rail, division plates and stakes, nearly new...**25% off list**

1—**SHOVEL**, Koehring Model No. 2, equipped with 1⅛ cu. yd. Rock Type Bucket, electric starter, powered by Waukesha Gasoline Engine..**$8250.00**

1—**ROLLER**, Huber 10-ton, 3 wheel, 4 cylinder Gasoline, A-1 .....**$2850.00**

1—**BLACKTOP PAVER**, Adnun, Powered by 4 cylinder Gasoline Engine, 2 solid rubber tires front, 2 rolls rear.....**$3795.00**

1—**CONCRETE PAVER**, Model 27E Koehring, with boom and bucket, just finished a job—a bargain. **$1995.00**

1—**CONCRETE PAVER**, Koehring Model 27E, complete, powered by gasoline engine.....**$4000.00**

2—**WHEELBARROW SCALES**, Winslow, Jr., 36"x 33" platform, one tare beam, two material beams. **EACH $100.00**

6—**SAW RIGS**, New Model No. 1 Beach, powered by gasoline engine, complete with 14" cross cut and 14" ripsaw Blades; offered at $30.00 reduction. **EACH $305.00**

1—**DUMP TRUCK**, Ford V-8, equipped with brand new 3 yd. Garwood Hydraulic Dump Body, has good tires....**$1050.00**

3—**BACKFILL TAMPERS**, Jackson electric, complete with 60 ft. of cable. **EACH $150.00**

1—**ELECTRIC PAVING VIBRATOR**, Jackson, with 4" head and 60 ft. of cable.....**$165.00**

1—**ELECTRIC VIBRATING GENERATOR**, Jackson, ¾ KVA, 120 volt, 3 phase, 60 cycle, powered by air cooled gasoline engine; will handle the above vibrator or backfill tampers....**$195.00**

1—**TAUTLINE CABLEWAY**, Sauerman, 5-ton capacity, with cables and sheaves for 540 ft. working span **$1250.00**

2—**POWER UNITS**, International Model 1530, 4-cylinder, 4½x6, mounted on steel base...**$375.00**

1—**POWER UNIT**, Hercules Model TXO, 90 HP, 4-cylinder gasoline, complete with clutch, 900 RPM, heavy duty **$1325.00**

1—**GRADER**, Pull-type, Adams No. 121, bank sloping, 12' blade.....**$500.00**

1—**GRADER**, Pull-type, "Caterpillar" Model 44, 10' blade, bank sloping.....**$950.00**

10—**GENERATOR SETS**, New Master Model MG6, 6.3 KVA, powered by 4 cylinder Gasoline Engine. **EACH $895.00**

1—**CENTRIFUGAL PUMP**, Rex 4" suction, 4" discharge, powered by 4 cylinder gasoline engine, mounted on two steel wheels.....**$450.00**

1—**COLD PATCH MIXER**, KWIK-MIX, Model 10BIT, 10 cu. ft. capacity, with loader and tilting drum, 4 cylinder Gasoline Engine, all on four pneumatic tires.....**$950.00**

We have a large stock of new and rebuilt Gasoline and Diesel Engines, all sizes, all makes.

800 WEST MAIN

ROY-C-WHAYNE SUPPLY COMPANY.

LOUISVILLE, KENTUCKY

AVAILABLE IMMEDIATELY

We offer for sale a complete Sand & Gravel Plant now operating nearby Cleveland. Equipment to be sold preferably as a unit or as a going business, but individual items can be purchased separately. Write for specifications and prices.

1—Model 361 MARION Dragline, 65′ boom. Caterpillar D13000 and 1½ Yd. Page RC Bucket. New 1937.
1—15x24 CEDARAPIDS Roller Bearing Jaw Crusher. New 1941. Vee belt drive to 35 HP General Electric Motor.
1—CLYDE 3-drum Dredge Hoist and 15 HP General Electric Motor.
1—CLYDE 2-drum Hoist and 10 HP. Triumph Electric Motor.
1—30″ COLUMBUS Reciprocating Plate Feeder and 5 HP Allis-Chalmers Motor.
1—10 HP BURKE Electric Motor. 1200 RPM 3/60/440 volts.
1—Model 50 MONARCH Tractor and Bulldozer.
1—150 Ton Steel bin. Now 2-compartment but equipped for 4 gates.
1—50 Ton Steel Bin—Single Compartment. Heavy Duty construction.
1—1937 FORD "Pickup" Truck.
1—150 Amp. LINCOLN Electric Motor Welder.
1—20 ton OHIO Steam Locomotive Crane, with 50′ Boom. Model CD—8 wheel.
1—1¼ Yd. BROWNHOIST Clamshell. Model Z-3.
1—48″x12′ ROBBINS Double Deck Vib. Screen. Model C900. Vee belt drive to 7½ HP U. S. Motor.
1—5″ MORRIS Centrifugal Water Pump and 40 HP Triumph Electric Motor.
200′—5″ Water Pipe with Detachable Cplgs.
1—10 KV PITTSBURGH Transformer.
1—48″x12′ BARTLETT & SNOW Revolving Screen with speed reducer and motor.
1—2.4 KVA Electric Motor Generator.
1—72″ LINK-BELT Sand Cone.
1—24″x220′ Belt Conveyor with Idlers. No frame. Very good belt, motor & drive.
3—Model 45 WHITE 5-ton Dump Trucks
1—Model 40 WHITE 3½-ton Dump Truck.
1—20 Ton FAIRBANKS Truck Scale. 10′x20′.
1—Lot Miscellaneous shop items—Drills; Grinders; Cutting Torches; Chain Hoists; tools; supplies and repair parts.

OTHER ITEMS FOR QUICK DELIVERY FROM OUR LIST

1—GA2 BUCYRUS-ERIE Combination Shovel and 40′ Crane Boom. Good Condition.
1—UNIVERSAL Crane and 5/8 Yd. Clamshell Bucket.
1—Shovel Front for NORTHWEST Model No. 2.
2—55 Ton BALDWIN Steam Switching Engines, Std. Ga. Rebuilt and ICC Inspected.
1—36″x8′ NEW HOLLAND Vib. Screen.
1—2½ Yd. JAEGER Truck Mixer—less truck. Clean and good condition.
1—½ Yd. GENERAL Shovel now being re-conditioned.
1—8x36 UNIVERSAL Jaw Crusher.
1—Model 1-B UNIVERSAL Jaw Crusher 8x12.
1—Model 1-M UNIVERSAL Jaw Crusher 6x7.
1—6′ KENNEDY Sand Cone.
1—10 TON GALION 3-wheel gas roller.
1—36″x6′ NIAGARA 3-deck Vib. Screen.
1—9x20 CEDARAPIDS Portable Gravel Plant complete with conveyors and power.

1—Stationary Asphalt Plant suitable for Patch or Maintenance Materials. Consists of 2—8000 Gal. Storage Tanks; 150 Ton Steel Bin; Vertical Silo for Drying; Scales; Elevators; Revolving Pugmill Mixer; Finished Material Bin; Boiler and Compressor. Can be purchased as a unit or separate items. Photos and other data on request.

PATTERSON EQUIPMENT COMPANY

1468 WEST 9TH ST. CLEVELAND, OHIO
CHerry 0439 DAY OR NIGHT FAirmount 5880

FOR SALE

CONCRETE PLANT

5—REX 200 Double Pumpcrete Machines with 50 H.P., A.C., 60 cycle, 3 phase 220/440 Volt electric motors—complete with Pugmill Remixers with 7½ H.P., A.C., 60 cycle, 3 phase, 220/440 volt motors.

1—REX 200 Double Pumpcrete Machine with 50 H.P., A.C. motor and Rotary Remixer.

2—Transfer Car Dollies—to be used for transferring Pumpcrete Units from Repair Line to active duty.

Also have complete supply of 8″ Pipe in all lengths and supply of bends and miscellaneous fittings as well as a large supply of repair parts for all units.

1—C. H. & E. Model No. 11, C. A., capacity 125 GPM at 320 lb. pressure—4½ x 5½ single acting Triplex Road Pump with Waukesha 6 cylinder 45 H.P. gasoline engine.

1—Gorman Rupp — R 100, Triplex Pump on Trucks, 100 GPM at 600 lbs. pressure with Hercules 55/65 H.P. gasoline engine.

1—Gorman Rupp R 125, Triplex Pump on trucks, 125 GPM at 320 lbs. pressure with Hercules 40/50 H.P. gasoline engine.

4—34E Koehring 2 compartment drum concrete mixers—mounted on standard frames equipped with air compressor for operation of transfer and discharge chute; also Batchmeters, with 3 phase, 60 cycle A.C. motors.

10—Rectangular steel Concrete Towers arranged in 5 pairs. Height 44′6″. These towers were used for Tremie Concreting, being lined up on one side of a R. R. Barge, interconnected and fitted up with stationary and sliding hoppers to feed 15 tremie pipes. The arrangement of each group of towers is 25′6″ spacing and additional guides between each group. In between each tower is placed a 3 yd. hopper from which a 3 way chute is placed to divide the flow of concrete into either of three hoppers. Also 15—3 yd. hoppers are mounted on the sliding frames.

Five (5) Conveying Systems—Robins Conveying Belt. Co.

1—Transfer Conveyor 36″ x 202′
1—Stocking Conveyor—36″ x 1000′
1—East Tunnel Conveyor — 36″ x 500′
1—West Tunnel Conveyor — 36″ x 500′
1—Mixing Plant Conveyor—36″ x 256′

These units are complete with chutes and gates and all electrical equipment for its operation. Belting is Equator Brand, 6 ply, 28 oz. duck.

CONVEYING SYSTEMS

BATCHER PLANT

1—Butler Bin Co. Four Compartment, 507 cu. yd. Bin as per Drawing CM 780-1. Bin bottom arranged to accommodate three weighing batchers, also includes aggregate and cement weighing batchers for 34 E Mixer.

1—3000 bbl. cement storage bin.

2—No. 44 Cement elevators and screw conveyors, capacity 300 bbls. per hour.

1—14 S. Ransome Standard Building Concrete Mixer mounted on 4 R. T. Wheels complete with 4 cylinder, 20 H.P. gas engine with power loader.

2—Haiss 35′—24″ Portable Belt conveyor frames with 7½ H.P. electric motors and with hopper gates.

1—Type B Patterson combined hot water service and storage heater —120″ dia. x 279″ overall length —Storage capacity 12,000 gals., 50 lb. water working pressure. Will heat 12,000 gals. in one hour from 40° to 125° with steam at 100 lbs. pressure tested for 150 lbs. and includes Thermostatic control valve.

1—Cleaver Brook, O. B. 30—Oilbilt steam generator plant. Will develop 10,500 lbs. steam hourly from and at 212° F. Approximately 300 H.P. Boiler.

Offers will be accepted for all or any part of the units offered for sale. Sale authorized by Bureau of Yards and Docks—U. S. Navy. Any or all equipment can be withdrawn at the discretion of the advertiser.

Other miscellaneous equipment available. Send us your inquiries.

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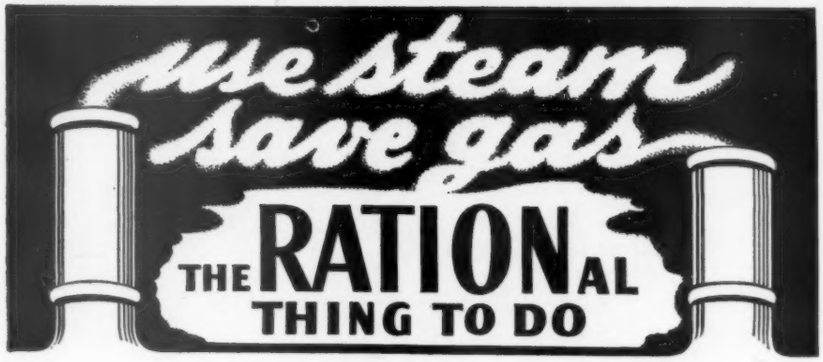

EVERY KIND OF CONSTRUCTION EQUIPMENT

AIR COMPRESSORS (STEAM)

1—Size 12 x 12 Type NSS Chicago Pneumatic Steam Air Compressor, rated 387′ @ 125 lbs. working pressure. Serial No. 5714.

1—Size 10½ CC Westinghouse Air Compressor, capacity 150′ @ 100 lbs. working pressure.

1—Size 9 x 11, Type GSS Chicago Pneumatic Steam Air Compressor, capacity 130′ @ 100 lbs. working pressure.

1—Size 11 x 10½ x 12 Westinghouse Air Compressor, steam operated, capacity 75′ @ 100 lbs. working pressure.

1—Size 8 x 8 x 10 Westinghouse Steam Air Compressor, rated 35′ @ 100 lbs. working pressure.

CRANES & SHOVELS (STEAM)

2—Type B-2 Erie steam Caterpillar Cranes, Serial Nos. 4372 and 4027, with 50′ booms and equipped ASME boilers. Can furnish with shovel attachments.

ENGINES (STEAM)

1—194 HP Greenfield double cylinder steam engine, size 11 x 12″. 250 RPM.

1—25 HP Orr & Sembower single cylinder vertical steam engine No. 31534, size 10 x 10″. Class B. 160 RPM.

1—12 HP Wachs vertical steam engine, size 7½ x 8. Speed, 200 RPM.

2—12 HP O & S engines, sizes 7 x 8½″, Serial Nos. 25589 and 25588.

1—10 HP O & S Vertical Engine, Serial No. 6621, size 7 x 7″. 200 RPM.

3—9 HP O & S vertical steam engines, Serial Nos. 49090, 6837, and 26317. Class F. Size 6½ x 7½″. Speed, 225 RPM.

2—9 HP Wachs vertical engines, Serial Nos. 9416 and 5749. Size 6½ x 7″. Speed, 190 RPM.

1—7 HP O & S engine, Serial No. 481. Size 6 x 6″.

1—7 HP Dake steam engine, Serial No. 4992, for air or steam operation, size 3½ S Speed, 400 RPM.

1—6 HP O & S steam engine type F, size 5 x 7½″. Speed 250 RPM.

1—5½ HP Cyclone steam engine, size 5 x 7″. Speed, 225 RPM.

HOISTS (STEAM)

THREE DRUM (With or Without Boiler) Double Drum and Single Drum

3—9 x 10″ 3-drum Mead-Morrison Steam Hoists, Serial Nos. 17747, 15535 and 14577. Skeleton type. Hoist rated 9,200 lbs. line pull.

1—8½ x 10″ 3-drum Lambert steam hoist, Serial No. 13366, hoist rated 8000 lbs. line-pull.

1—8¼ x 10″ American 3-drum steam hoist, rated 8,500 lbs. line pull.

1—7¼ x 10″ 3-drum Mundy steam hoist, Serial No. 10756, skeleton type. Hoist rated 6,500 lbs. line pull.

1—8¼ x 10″ Mundy 3-drum steam hoist, Serial No. 14172. Hoist rated 8,000 lbs. line pull.

1—7 x 10″ American 3-drum steam hoist. Hoist rated 7,500 lbs. line pull.

1—7 x 10″ Lambert 3-drum steam hoist, Serial No. 9629. Hoist rated 5,000 lbs. line pull.

DOUBLE DRUM

1—8 x 12″ double drum Mundy steam hoist, Serial No. 11830. Hoist rated 8,500 lbs. line pull.

1—9 x 10″ Thomas double drum steam hoist. Hoist rated 9,000 lbs. line pull.

1—8¼ x 10″ National double drum steam hoist. Serial No. 4939. Hoist rated 8,500 lbs. line pull.

1—8¼ x 10″ Lidgerwood double drum hoist. Hoist rated 8,000 lbs. line pull. Serial No. 17882. Skeleton type.

1—8¼ x 10″ double drum Street cable-way reversible hoist. Hoist rated 2,800 lbs. line pull at 600 FPM.

1—8¼ x 10″ Street double drum steam hoist, Serial No. 1322. Hoist rated 8,500 lbs. line pull.

1—7 x 10″ Lidgerwood double drum Street hoist, skeleton type. Hoist rated 5,000 lbs. line pull.

1—7 x 10″ double drum Lidgerwood steam hoist, Serial No. 3050. Hoist rated 5,000 lbs. line pull.

1—7 x 10″ Lambert double drum steam hoist, Serial No. 8226. Hoist rated 5,000 lbs. line pull.

1—7 x 10″ Flory double drum steam hoist, Serial No. 5474. Hoist rated 7,000 lbs. line pull.

1—7¼ x 10″ double drum Mundy steam hoist. Hoist rated 6,500 lbs. line pull.

3—7 x 10″ American double drum steam hoists—Hoist Serial No. 732 U, 714 Q, and 710 U. Rated 7,500 lbs. line pull.

1—7 x 10″ Mead-Morrison double drum steam hoist, Serial No. 14635. Hoist rated 5,800 lbs. line pull.

2—7 x 10″ American double drum steam hoists, Serial Nos. 780 M and 776 M. 7,500 lbs. line pull.

1—7 x 10″ American double drum steam hoist. Hoist rated 6,500 lbs. line pull.

1—7 x 10″ Mead-Morrison double drum steam hoist, Serial No. 14659. Hoist rated 6,500 lbs. line pull.

1—6¼ x 10″ Lidgerwood double drum steam hoist, No. 70-1/3 capacity. 4,000 lbs. line pull.

SINGLE DRUM

1—8¼ x 10″ National single drum steam hoist, Serial No. 1294. Skeleton type. Capacity 8,500 lbs. line pull.

1—7½ x 10″ O & S single drum steam hoist, size 609. Hoist rated 5,000 lbs. line pull.

8—Holding Drums—Clyde, American, Thomas and Hayward.

PUMPS (STEAM)

1—10 x 6½ x 12″ Union horizontal single piston, boiler-feed pumps. Serial No. 9511. Capacity 172 GPM.

1—9 x 6½ x 10″ duplex horizontal steam pump. Rated 125 GPM.

1—7 x 5 x 10″ Platt Iron Works steam pump, Serial No. 78673. Capacity 200 GPM.

1—7 x 5 x 13″ Cameron steam pump, size 5, Serial No. 20128. Pump rated 130 GPM.

1—7 x 5 x 13″ Cameron horizontal direct-acting steam pump, Size 5 A. Serial No. 29205. Capacity 130 GPM.

1—6 x 4 x 10″ Wilson-Snyder horizontal duplex steam pump, Serial No. 2375. Pump rated 65 GPM.

1—10 x 6 x 10″ Worthington duplex steam pump. Serial No. 252361. Pump rated 200 GPM.

1—6 x 4 x 6″ Epping-Carpenter horizontal duplex steam pump. Serial No. 15658. Capacity 34 GPM.

1—6 x 4 x 8″ American single acting steam pump, Serial No. 97997. Capacity 50 GPM.

1—5¼ x 3½ x 5″ Worthington duplex steam pump, Serial No. 238169 W. Capacity 24 GPM.

1—5¼ x 3½ x 5″ Advance Pump and Compressor Co. duplex steam pump. Serial No. 25320. Capacity 24 GPM.

1—5 x 5 x 7″ Cameron single acting steam pump, Serial No. 62720. Capacity 82 GPM.

1—4½ x 2¾ x 4″ Worthington horizontal duplex steam pump. Capacity 21 GPM. Serial No. 622934 W.

1—3 x 2 x 3″ Worthington horizontal duplex steam pump. Serial No. 798163 W. Capacity 6 GPM.

1—3 x 2¾ x 3″ Canton-Hughes duplex steam pump. Capacity 15 GPM.

1—3 x 2 x 3½″ Buffalo-Springfield horizontal duplex steam pump, Serial No. 33372. Capacity 10½ GPM.

1—2½ x 1⅜ x 2″ Union horizontal single direct-acting steam pump, Serial No. 105843. Capacity 1½ GPM.

ALL THE ABOVE ARE BOILER-FEED PUMPS. WE HAVE THE FOLLOWING STEAM WATER PUMPS:

1—10 x 10 x 12″ Foster Simplex horizontal direct-acting steam pump, Serial No. 41201. Capacity 400 GPM.

1—6 x 6 x 6″ Platt Iron Works duplex steam pump, Serial No. 78878. Capacity 174 GPM.

1—5 x 5 x 5″ duplex horizontal steam pump. Capacity 75 GPM.

1—2 x 2 x 3½″ single acting horizontal steam pump, Serial No. 1472. Capacity 5½ GPM.

ROAD ROLLERS (STEAM)

1—10 ton 3-wheel Monarch steam road roller, Serial No. 1030. Rear rolls 64″ diameter x 22″ face. Front rolls 43″ diameter x 40″ face.

1—5 ton Iroquois tandem steam road roller, Serial No. 2160. Front rolls 30″ diameter x 38″ wide. Rear rolls 48″ diameter x 38″ wide.

1—5 ton Buffalo-Springfield double drive tandem roller, Serial No. 10288. Front rolls 36″ diameter x 39″ face. Rear rolls 42″ diameter x 43″ face.

1—5 ton Buffalo-Springfield single drive tandem steam road roller, Serial No. 11218. Front rolls 36″ diameter x 44″ face. Rear rolls 42″ diameter x 44″ face.

1—5 ton Pioneer tandem road roller, Serial No. 272. Front rolls 30″ diameter x 39″ face. Rear rolls 48″ diameter x 39″ face.

ALL THE ABOVE ROLLERS ARE COMPLETE IN EVERY RESPECT, WITH BOILER READY TO RUN.

SWINGERS

1—12 HP Lidgerwood, 6¼ x 8″ steel swinger, capacity 5,000 lbs. LP.

1—10 HP Lambert steam swinger, size 5½ x 8″, link motion, capacity 8,000 lbs. LP. 1—50 FPM.

2—10 HP Mead-Morrison steam swinger, size 4¼ x 6″, capacity 7,000 lbs. LP, 60 FPM.

1—10 HP Dake steam swinger, size 4, capacity 8,500 lbs. LP.

1—10 HP Lambert link motion swinger, size 5½ x 8″, Class D, capacity 3,400 lbs. LP.

2—10 HP Mead-Morrison swinger, type 131, size 4½ x 6″, capacity 7,000 lbs. LP, 60 FPM.

1—10 HP Lambert Class D, size 5½ x 8″, link motion steam swinger, capacity 8,000 lbs. LP, 50 FPM.

2—7 HP American steam swinger, size 4 x 5″, capacity 4,000 lbs. LP.

4—7 HP Dake steam swinger, size 3½S, capacity 5,775 lbs. LP, 30 RPM.

1—6 HP Lidgerwood steam swinger, size 5 x 6″, 2 spool type, capacity 4,000 lbs. LP.

1—Size 5 x 7″ American steam swinger, capacity 6,000 lbs. LP, 80 FPM.

1—Size 6 x 7″ Marion double-cylinder swinging engine.

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1160 S. WASHTENAW AVE.

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P. O. BOX 933 DEPT. PQ

EQUIPMENT CORPORATION of AMERICA

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TEUSCHERS STOCK LIST

EVERYTHING LISTED IS IN OUR ST. LOUIS STOCK

RUBBER BELTING

FRICTION SURFACE TRANSMISSION BELTING CARRIES OUR CELEBRATED BRAND "TE-CO"

Width	Ply
1 to 48 Inch	3
1 to 48 Inch	4
1 to 48 Inch	5
1 to 48 Inch	6
1 to 48 Inch	8

ELEVATOR & CONVEYOR BELTING

FRICTION SURFACE BRANDED "TE-CO"

Width	Ply
6 to 48 Inch	3
8 to 48 Inch	4
10 to 48 Inch	5
10 to 48 Inch	6
12 to 48 Inch	8

RUBBER COVERED CONVEYOR BELTING

BRANDED "I'M GOOD"

Width	Ply	Top	Pulley
12	4	3/32	1/32
14	4	3/32	1/32
16	4	3/32	1/32
18	4	3/32	1/32
20	4	3/32	1/32
24	4	3/32	1/32
18	4	1/8	1/32
24	5	1/8	1/32
30	5	1/8	1/32

"ROCKWOOD" V BELTS

ALL TRANSMISSION SIZES IN STOCK
Multiple Groove A—Matched Sets
Multiple Groove B—Matched Sets
Multiple Groove C—Matched Sets
Multiple Groove D—Matched Sets
Multiple Groove E—Matched Sets
Fractional Horsepower FA
Fractional Horsepower FB
Buy Only Branded Belting for Service.

30,000 IRON AND STEEL PULLEYS

ALL SIZES TO 84x20" INCLUDING:

20—58x12 Cr. Steel Sp.	500—26x6 Cr. Steel Sp
19—50x10 Cr. Cast Solid	800—26x4 Cr. Steel Sp.
10—42x10 Cr. Cast Solid	400—12x4 Cr. Steel Sp.
20—36x10 St. Steel Sp.	200— 8x3 Cr. Cast Solid
200—28x9 Cr. Steel Sp.	200— 5x3 Cr. Cast Solid

USED DROP HANGER FRAMES ONLY

No.	Drop	Size	Price	No.	Drop	Size	Price
75	9	1 11/16	$3.25	10	12	2 7/16	$4.40
200	18	1 15/16	4.25	15	14	2 7/16	5.50
80	20	1 15/16	5.00	60	16	2 7/16	6.00
20	22	1 15/16	5.65	40	18	2 7/16	6.50
50	24	1 15/16	6.35	70	20	2 7/16	7.00
8	27	1 15/16	7.50	400	22	2 7/16	8.00
40	18	2 3/16	5.00	500	24	2 7/16	8.50
200	20	2 3/16	6.00				

HANGER BEARINGS, USED AND NEW

		Each			Each
750	Hyatt 1 15/16	$5.00	25	S.K.F. 1 15/16	$ 5.00
100	Hyatt 2 7/16	7.50	20	S.K.F. 2 7/16	10.00

NEW

Size Shaft	1 3/16	1 7/16	1 11/16	1 15/16
Ball Bearing	$11.50	$12.00	$13.50	$15.00
Ring Oiling	2.40	3.00	3.30	5.15

NEW

Size Shaft	2 3/16	2 7/16	2 11/16	2 15/16
Ring Oiling	$ 5.95	$ 6.70	$ 8.30	$11.60

2000 FLAT BOXES—ALL SIZES
1600 PILLOW BLOCKS—ALL SIZES
SPROCKET WHEELS
CAST IRON MOULDED—ALL SIZES
CUT IRON AND STEEL—ALL SIZES
SPROCKET CHAIN—STATE YOUR WANTS

V GROOVE SHEAVES BARGAIN LIST

No. 1st—O.D.	2d—Grooves	3d—V-Belt	4th—Price 5th
1—3 7/8x3—A	$3.00	1—9 1/2x2—C	$11.50
1—4x1—AB	1.75	1—9 1/2x3—C	13.90
1—4x3—A	3.00	1—9 3/4x3—AB	5.95
1—4x4—A	3.65	1—9 3/4x4—C	16.35
1—4 1/4x1—AB	1.85	1—9 3/4x6—AB	12.65
1—4 1/4x3—A	3.15	1—10x2—C	11.65
2—4 1/2x3—O	2.50	1—10x3—B	4.65
1—4 3/4x2—AB	2.70	1—10 1/4x3—AB	5.90
1—5x1—AB	1.95	1—10 5/8x3—AB	6.70
1—5x5—AB	4.85	1—11x2—C	12.50
1—5 3/8x6—AB	5.75	2—12 1/2x2—C	13.15
1—5 1/2x2—AB	3.10	1—15 1/2x2—C	16.25
1—5 1/2x3—AB	3.70	1—16 1/2x3—A	9.05
1—5 3/4x3—AB	3.80	1—19x5—D	43.70
2—5 7/8x2—AB	3.30	1—19x10—D	70.35
1—6x1—AB	2.35	2—19 1/4x2—C	18.50
1—6 1/4x2—AB	3.50	1—20 1/2x3—A	17.00
2—6 1/4x3—AB	4.15	4—21 5/8x2—C	20.75
1—6 1/4x7—AB	8.75	2—23 1/4x2—C	22.50
1—6 3/4x4—AB	5.50	4—26x2—C	24.75
1—7 1/4x1—AB	2.65	3—31 1/2x1—AB	16.35
1—7 3/4x4—AB	6.35	9—31 1/2x3—AB	23.75
1—9 1/2x2—AB	4.65	1—37x4—C	48.00

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Width	Ply	Top & Bottom Covers
48"	8	1/8" — 1/16"
42"	5	1/8" — 1/16"
36"	6	1/8" — 1/16"
30"	6	1/8" — 1/16"
30"	5	1/8" — 1/16"
24"	5	1/8" — 1/32"
24"	4	1/8" — 1/32"
20"	5	1/8" — 1/32"
20"	4	1/8" — 1/32"
18"	4	1/8" — 1/32"
16"	4	1/8" — 1/32"
14"	4	1/16" — 1/32"
12"	4	1/16" — 1/32"

TRANSMISSION BELTING HEAVY-DUTY— FRICTION SURFACE

Width	Ply	Width	Ply	Width	Ply
18"	6	10"	6	6"	5
16"	6	10"	5	5"	5
14"	6	8"	6	4"	5
12"	6	8"	5	4"	4
12"	5	6"	6	3"	4

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12"	6	1/16" — 1/16"
14"	6	1/16" — 1/16"
16"	6	1/16" — 1/16"
18"	6	1/16" — 1/16"

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A.W.Y. 136	One Yard Owen, Type J, with Counterweight, Less Teeth, Clamshell Bucket.
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1—Spaced 40' center, 18" steel buckets, chain No. 8440
1—Spaced 25' center, 6" malleable bucket, No. 103 chain
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Steel and malleable buckets, 5" to 30"
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Williams "Semi-Vulcanite" Hammer mill No 2
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American Standard Double crushing rolls 36"x30"
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1000 ft. 42" conveyor belt, 6 & 7 ply
445 ft 30" conveyor belt, 6 ply
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86 ft. new 54" conveyor belt, 5-7 ply
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75 selected head and tail pulleys
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4 revolving screens, 2'x8', 30"x12', 3'x8', 4'x16'
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8 ton Whitcomb 36" gauge locomotive
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75 h.p. Fairbanks-Morse Diesel engine, YV, 300 rpm
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1—Revolving dryer 4'x21', 18" flue
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200 HP slipring Burke motor with all controls, extended shaft, outboard bearing and Link-Belt 4' centers
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Dings magnetic separator pulley 20" dia. x 23½" width
4—170' head 3" Fairbanks-Morse pumps
4—Gardner-Denver drifting drills
2—Worthington drifting drills
2—Ingersoll-Rand steel wheel wagon drills
14x26 Acme jaw crusher—rebuilt
100-ton three compartment bin with weigh batchers
200-bbl. cement bin with scales
150-ton Blaw-Knox 3-compartment with 300 bbl. cement bin hooked up to one weighing hopper
110-ton Blaw-Knox 3-compartment bin and 300 bbl. cement bin, 1½ yr. old
110-ton Blaw-Knox 3-compartment bin and 300 bbl. cement bin, 4 months old
Tyler screens

HOISTS PUMPS COMPRESSORS MIXERS BUCKETS

THE W. T. WALSH EQUIPMENT CO.
3088 West 106th Street Cleveland, Ohio

FOR RENT

1—Complete Concrete Paving Outfit including nearly new Koehring 34E Twin Batch Paver, 34-foot Boom, Template Puller, Sub-grade Planer, Push Planer, Gas-Electric Finishing Machine, Longitudinal Finisher, R B Power Sub-grader, Carr Form Grader, Bucyrus-Erie Crane with 1½ yard Clam Bin and Batcher, 300 Bbl. Bulk Cement Plant, 8-ton Tandem Roller, Triplex Water Pump, 4000 feet of Forms, Vibrators, 35,000 feet Water Pipe, Adams Heavy Duty Diesel Motor Grader, etc.

The above offered for rental only; prefer to rent outfit complete, but will consider grouping major items only.

ROY-C-WHAYNE
SUPPLY COMPANY.
800 West Main St. Louisville, Ky.

For Sale

ROTARY KILN, 6'6"x100'

IRON & STEEL PRODUCTS, INC.
37 years' experience
13490 S. Brainard Ave., Chicago, Illinois
"Anything Containing IRON or STEEL"

In Stock—Ready to Go

CONVEYOR BELTING

18", 24", 30"

Drive Belting

10" & 12" 5 & 6 PLY

E. Cohn & Sons
Cedar Rapids Iowa

RECONDITIONED TRUCK MIXER FLEET

6—4-yard Jaeger Truck Mixers mounted on A. C. Mack Trucks.
2—3-yard Blaw-Knox Truck Mixers mounted on B. F. Mack Trucks.
4—12-yard Steel Dump Bodies with Hoists.
4—2-yard Separate Engine Drive Jaeger Mixers, mounted on 1936 E. H. Mack Trucks.
1—2-yard Separate Engine Drive Jaeger Mixer, mounted on 1941 Ford V-8 Truck.

All these machines now working. Immediate delivery.
Will consider minimum 6-month rental. Wire, phone our expense.

THE JAEGER-LEMBO MACHINE CORP.

Northern Blvd. at 127th St. Newtown 9-7777 Corona, L. I., N. Y.

SPREADER PLOW

Bucyrus Class 50, Std. Ga.; Adjustable 12′ Min., 23′ 9″ maximum, each side of track. Pneumatic control by one man; weight 137,500 lbs.; cost new $26,000.00; used very little; excellent condition; located near Hibbing, Minnesota.

TRUCKS, EUCLID

6-10 yard Euclid Model FD rear dump trucks, with Cummins Super-charged Diesel Engine.

BUTLER BROTHERS
(Iron Ore Miners)
137 E. 8th St. St. Paul, Minn.

PRICED FOR QUICK SALE

1—Link Belt Shovel Boom Assembly with 1 yard Amsco dipper, excellent condition, will fit models K1, K2, K35, K42 ..... $750.00

1—P&H ¾ yard Shovel Boom Assembly for Model 206..... $500.00

1—12″x32″ Lippman Roller Bearing Jaw Crusher $2,200.00

1—Allis-Chalmers Blake Type Jaw Crusher 10″x20″ $1,000.00

LIPPMANN ENGINEERING WORKS
4603 West Mitchell St. Milwaukee, Wis.

CONCRETE EQUIPMENT

B.K. 325 bbl. Bulk Cement Bin, weigh batcher.
B.K. 50 ton, 2 compt. bin with weigh batcher.
Fuller Kinyon bulk cement unloader, portable.
Fuller C40 rotary air compressor, electric.
Koehring 27E Paver, boom and bucket.
Rex Pumperete Machines, Models 180, 190, 200.
Ransome 27E Dual Drum Paver, Rebuilt.
Smith 27E Paver with 40′ Tower.
Jaeger 4 yd. Mixers on Mack Trucks.

SPECIALS!!

Generator 37.5 KVA with Buda Diesel Engine.
Allis Chal. Model K Tractor with bulldozer.
1—Butler 16 cu. ft. Asphalt Pug Mill.
2—Steel Stiff-leg Derricks, 10 tons, 100′ bm.
2—Steel Stiff-leg Derricks, 15 tons, 110′ bm.
Allis-Chalmers cent. pump, electric, 3500 GPM, 50′.
Worthington 8″ cent. bronze impeller, elec. port.
Dredge Pump 10″ FH. cent. 200 HP AC motor.
Vertical Boiler, steam, 100 HP.
Vertical Boiler 50 HP A.S.M.E. 125 lb. pressure.

CRUSHERS—CRUSHER PLANTS

Gyratory crushers: K.V.S. 30, 37-S, 49; Telsmith 32, 8A, 8B; Traylor 8″; McCully 13″, 8″, 6″.
Jaw: 6x12, 9x16, 10x20, 14x24, 12x26, 13x30, 15x30, 16x32, 56x84.
Complete Rock Crushing Sand & Gravel Plants.

BUCKETS—STONE SKIPS

2 yd. Hayward Clamshell, rehandling.
1½ yd. Hayward Clamshell, rehandling.
1½ yd. Williams Clamshell, rehandling.
2—½ yd. Haiss rehandling clamshell.
¾ yd. Haiss rehandling clamshell.
Erie ¾ yd. rehandling, clamshell.
20—Battleship Buckets, 2 to 3 yds.

SHOVELS—CRANES

Lorain Model 77 Diesel Shovel, 1½ yd.
P & H 7 ton Truck Crane, pneu.
Koehring Model 301 Shovel, ¾ yd.
Bucyrus Erie Model 1035, ⅞ yd. Shovel, gas.
Bucyrus Erie Steam Shovel, ¾ yd.
Locomotive Crane 15 ton, O & S, gas.
Locomotive Crane McMyler, 20 ton, elec.
Bucyrus Erie Model 50B, 2 yd. comb. Shovel-Crane.
Marion Model 480, 2 yd. Steam Shovel.
Bucyrus-Erie Model 1030 electric tunnel shovel.
Marion Model 32 Steam Shovel, 1⅛ yd. cap.
Ind. Brownhoist 10 ton Cat. Crane, gas.
Brownhoist 5-7½ ton Crane, gas.

LOCOMOTIVES—CARS

American 60 ton, steam, std. ga.
Vulcan 8 ton, std. gauge, gas.
Plymouth 8 ton, std. gauge, gas.
2—Vulcan 6 ton, gas, 36″ gauge.

RICHARD P. WALSH CO.
30 Church St. New York, N. Y.

FOR SALE

Special Offering

350 TONS STEEL CABLE 1¼″ TO 1⅞″ DIAMETER. ALL IN FIRST-CLASS CONDITION.

Used Metal Working Machinery, Pipe
Structural Steel
Steel Plates and Sheets
Rails, Locomotives, Cars
Contractors Equipment
Storage Tanks

Also Will Buy Any of Above.

HYMAN-MICHAELS CO.
122 S. Michigan Av. Chicago, Ill.

FOR SALE

Complete Sand and Gravel Dredge consisting of:
1—250 H.P. Fairbanks-Morse Marine type 5 cylinder Diesel Engine.
1—12″ Suction 10″ Discharge American Manganese Counterflow Pump.
All necessary Suction Pipe and Hose.
1000′ Discharge Pipe.
4 Pontoon Steel Hull Boat 24′x45′.
All necessary Priming Pumps, Pipes, Oil Pumps and Light Plant.
This Dredge in perfect condition and operating every day.
Dredge bolted together and can be dismantled and moved with minimum expense.

WATERS & McCRARY SAND & GRAVEL CO.
Columbus, Mississippi

TEAM UP FOR VICTORY with "CONSOLIDATED"

20″ GYRATORY CRUSHER USED ONE YEAR ON SLATE

1—20″ Allis-Chalmers Superior McCully Gyratory Crusher, feed opening 20″ wide, capacity 125 t.p.h. on 3″ setting, 275 t.p.h. at 5½″. Shop No. 8311. With or without 125 H.P., 3/60/440 volt slip ring motor and controls.

JAW CRUSHERS

1—22″x50″ Champion, all steel frame.
Also an assortment of smaller sizes.

CRUSHING ROLLS

1—36″ d.x16″ Sturtevant Mill Co.
2—40″x16″ Colorado Iron Works.
1—42″x16″ Allis-Chalmers Anaconda type.
1—30″x30″ Jeffrey Single Roll Crusher.

BUCKET ELEVATORS

27′ c/c—14x7; 29′ c/c—14x7; 40′—7x5; 42′—10x6; 44′—7x5 belt; 70′—16x8; 90′—16x8; 3-100′—7x5, belt; all of these steel encased.

BELT CONVEYORS

5—18″ Steel Frame in 15′ sections, 4″ cross channels, 6″ long channels. Link-Belt troughing and return idlers, with anti-friction bearings; 50′, 85′, 100′, 125′, 150′ centers.
1—24″x105′ with wood frame.
1—30″x132′ c/c with wood frame, anti-friction idlers.
3—18″ Sandvik flat belt Conveyors, motor driven, with steel framework; 2—60′ c/c; 1—80′ c/c.

PAN CONVEYOR

1—24″x65′ c/c Jeffrey Steel Pan Conveyor.

ROTARY DRYERS, Direct Heat

3′x20′, 5x26′, 5x30′, 6x24′, 6x50′.

ROTARY KILNS

4x30′, 4x40′, 8x80′, 10x175′.

CENTRIFUGAL AIR SEPARATORS

1—10′ dia. Sturtevant Mill Co.
2—14′ dia. Gayco.

TUBE MILLS

2—7′x24′ Smidth iron lined.

RAYMOND PULVERIZERS

2—5 roll high and low side, also No's. 0000, 1, 3.
5—Raymond Imp Pulverizers, also used for coal pulverizers; No's. 50, 55, 90.

VIBRATING SCREENS

1—4′x8′ 2-deck, Allis-Chalmers, heavy duty.
4—4′x5′ No. 39 Tyler Hummers, 2-deck.
Other makes and sizes.

FOR 25 YEARS A SYMBOL OF CONFIDENCE

CONSOLIDATED PRODUCTS COMPANY, INC.
17-19 PARK ROW NEW YORK, N. Y.
Shops and Yard at Newark, N. J., cover eight acres.

Lefton Industrial Corp.
St. Louis, Mo.
212 Victor Street
L. D. 517

Steam — Gasoline — Electric
HOISTS
Crushing and Screening Equipment
Relaying Rails—Spikes—Bolts—Tie Plates

LOCOMOTIVES
SHOVELS — CRANES
CARS

1—50 ton American 4 wheel saddle tank, code boiler, standard gauge, being rebuilt.

1—22 ton American 4 wheel saddle tank, code boiler, standard gauge, overhauled.

2—40 ft. steel flat cars, 100,000 lb. capacity, cast steel "U" section truck frames, new decks, interchange condition.

1—33 ton standard gauge Vulcan saddle tank, ASME Code boiler.

Crane or Dragline Fronts for Marion 37 and Bucyrus 50-B, One Each.

1—1½ Yd. Rehandling Clamshell Bucket, Practically New.

Birmingham Rail & Locomotive Co.
BIRMINGHAM, ALABAMA

FOR SALE

1—Model 32 Marion Steam Shovel
1—25′ Boom—16′ Sticks—1 yd. bucket for Model 104 Northwest Shovel
1—8 ton, 24″ Gauge Whitcomb Locomotive, Gas
3—5D Allis-Chalmers Gyratory Crushers
1—6D Allis-Chalmers Gyratory Crusher
1—48″ x 12′ Allis-Chalmers Revolving Screen
2—75 hp Horizontal Return Tube Boilers
1—100 hp Horizontal Boiler
3—5,000 gallon Corregated Galvanized Water Tanks
100—1½″ x 108″ Seamless Boiler Tubes
Assorted Boiler Tube Rollers 1¼″ to 4″
20 Assorted Single and Double Steel Cable Blocks
1—Set Tylor Sand Testing Screens 14-28-48-100-200 mesh
Assorted Solid and Split Cast Iron Pulleys
2—Large Steel Camp Ranges
100—All Steel Spring Camp Cots
Following Trucks in Good Running Condition with Dump Bodies:
1—'39 Dodge, '40 Chevrolet, '39 Chevrolet, '38 Chevrolet, '36 Chevrolet, '35 Chevrolet.

Ellison Road Construction Co.
Garnett, Kansas

FOR SALE

1—Monighan Steam Dragline, skid and roller 100′ boom, 3½-yd. bucket. Butt-strapped boiler. 10½″x12″ main engine.

MALVERN GRAVEL COMPANY
Malvern, Arkansas

FOR SALE

7—30 Ton flat cars
1—Mogul 56 Ton Locomotive
1—Porter Saddle Type Locomotive, 13 x 18″

Box 128
PIT AND QUARRY PUBLICATIONS
538 S. Clark St. Chicago, Ill.

1—12″ Amsco Dredge pump, with direct connected 400 HP Allis-Chalmers, 2200 volt, 3 phase, 60 cycle motor, complete with primary oil switch, drum controller, and variable resistors.

Electrical Engineering and Construction Co.
13th and Walnut Sts. Des Moines, Iowa

CRAWLER SHOVELS FOR SALE

1—1¾ yd. Marion Type 37 steam
1—⅞ yd. Erie gas-air
1—¾ yd. Erie Type B steam
1—¾ yd. Thew Type 0 gas combination shovel and crane

HAGERSTOWN EQUIPMENT CO., INC.
Hagerstown, Md.

DEPENDABLE USED MACHINES

Bay City ¾ yd. shovel
Hyster truck crane
Carroll 24x36 jaw crusher
Symons 4x12 double deck screen
Blaw Knox 30 yd. bin
Plymouth 4 ton locomotive
Conveyors, washers, pumps, screens, etc.

TRACTOR & EQUIPMENT CO.
3515 W. 51st St. Chicago, Ill.

RAILS NEW AND RELAYING

MOST ALL SECTIONS IN STOCK also spikes, bolts, frogs, and switches available.

500 BRICK DRYER CARS

M. K. FRANK
480 Lexington Ave. New York City
25 St. Nicholas Bldg. Pittsburgh, Penna.

FOR SALE

½ yd. P&H Shovel Model 300A. Heavy duty. Fair condition.
½ yd. No. 641A. Lakewood Clamshell bucket.
1—10S Koehring Mixer, gas power.
1—20 cu. ft. Besser Batch mixer, all complete except power.

CEMSTONE PRODUCTS COMPANY
1520 East Minnehaha St. St. Paul, Minn.

A REAL PURCHASE OPPORTUNITY!
ELECTRIC SHOVEL

6½-7½ yard, Bucyrus 320-B; R. R. Trucks

IRON & STEEL PRODUCTS, Inc.
38 years' experience
13490 S. Brainard Ave., Chicago, Illinois
"ANYTHING containing IRON or STEEL"

FOR SALE

1—5 ton—24 in. gauge Plymouth Gasoline Locomotive.
30—¾ cubic yard steel dump cars 24 in. gauge—in A-1 shape.
1—Half mile rails for the above.

PIELET SCRAP IRON AND METAL COMPANY
2639-41 South Whipple St. Chicago, Ill.

FOR SALE

2 Porter Steam 18 Ton, 36″ gauge locomotives, with 10 Western dump cars.

NORTHWESTERN GRAVEL CO.
Lake View, Iowa

MOTORS IN STOCK

1—250 HP—440 Volt G. E. Slip Ring, 3 Bearing 700 R.P.M.
1—200 HP — 440 Volt Allis-Chalmers Slip Ring, 2 Bearing 700 R.P.M.

INDEPENDENT ELECTRIC MACHINERY CO.
300 Southwest Blvd. Kansas City, Mo.

P&H Model 300 Crane with ½ yd. Clamshell. Good operating cond. 35 ft. boom, $2750.
Telsmith Gyratory Crusher good cond. $325.
6x6 Swaby Gravel Pump, no power, $60.
Parson Model 20 Backfiller, $350. Good for small loading crane.

BURLINGTON QUARRIES CORP.
BURLINGTON, WISCONSIN

RAILS and ACCESSORIES

RELAYING RAILS—Super-quality machine-reconditioned—not ordinary Relayers.
NEW RAILS, Angle and Splice Bars, Bolts, Nuts, Spikes, Frogs, Switches, Tie Plates, and all other Track Accessories.
Most sizes usually available from warehouse stocks. Every effort made to take care of emergency requirements. Phone, Write or Wire

L. B. FOSTER COMPANY, Inc.
PITTSBURGH NEW YORK CHICAGO

FOR SALE

1 Blake 10x20, and 1 Champion 12x26 JAW CRUSHERS; 1—30x30 Double Roll Slugger type, price $1000.00 each. Equivalent to 90% of new.

SUMTER FLINTROCK COMPANY
Leesburg, Florida

FOR SALE

1—75 Ton O.E.T. Crane, 65′ Span
1—20 Ton O.E.T. Crane, 50′ Span
1—50 Ton Whiting Electric Hoist
1—400 ft. Span Bridge Type Crane
1—110 HP A1 Ch. Gasoline Tractor
1—60 Ton Whiting Hook with 4 Sheaves
1—70,000 & 50,000 Gal. Tanks on Towers
1—Lidgerwood Electric Cableway, Complete

H. & P. MACHINERY COMPANY
5819 Enright Ave. St. Louis, Mo.

½ Yd. Comb. Byers Shovel-Crane-Pullshovel.
1¼ Yd. Northwest Shovel Attachment.
1¼ Yd. Bucy-Erie 41B Shovel Attachment.
15 Yd., two compartment steel bin.
Erie, 40′ crane boom with front drum.
1½ Yd. 36″ gauge dump car.
3—12 ton 36″ gauge Whitcomb gas locos.
¾ Yd. and 1½ Yd. Clamshell Buckets.

J. T. WALSH, Brisbane Bldg., Buffalo, N. Y.

FOR SALE

18″ x 36″ Stevenson Single Roll Crusher.
9″ x 36″ Wheeling Jaw Crusher.
9″ x 15″ Phillips Jaw Crusher.
#4 Champion Jaw Crusher.
#1 Williams Hammermill Crusher.

PITTSBURGH MACHINERY & EQUIPMENT CO.
Aspinwall Pennsylvania

FOR SALE

Keystone Blasthole Drill, Model 71, Crawler mounted. Excellent condition. Immediate possession.

Contact
MORGAN COAL COMPANY
19 West 38th St. Indianapolis, Ind.

SPECIAL BARGAINS

20 ton Link Belt 8 wheel locomotive crane, 50′ boom.
P&H 400 crawler gas combination shovel, crane and dragline, ¾ yard.
McMyler crawler gas crane with generator for magnet work, 50′ boom.
Speeder crawler gas ½ yard crane.
Link Belt crawler gas 1 yard crane.
2—Erie crawler steam shovels, ¾ yard.
Erie crawler steam crane, ¾ yard.
Parsons Model 20 crawler gas backfiller.
Buckeye Model D backfiller.
2—1000 H. P. Nelseco Diesel engines.
Boilers for high and low pressure.

THE ACME EQUIPMENT COMPANY
14057 Schaefer Highway
Detroit, Michigan

SHOVEL, Lima 1¼ yd. Model 101 crawler mounted, serial number in 140 series, with Waukesha gasoline engine, in good operating condition. Price F.O.B. cars Missouri shipping point $7000.00

SCREENING & LOADING PLANT, used Cedar Rapids portable gravel screening and loading plant, one piece type, with Waukesha 4 cylinder gasoline engine, mounted on truck in place of crusher, 1¾″ round opening revolving screens, 30′ feed conveyor with hopper, 40′ delivery conveyors. Capacity 75 to 100 tons per hour. Good condition..$1800.00

WAGON DRILL, Gardner-Denver Model UMBX Universal drill mounting complete with pneumatic tired wheels, with PM-101 pneumatic feed and D89 drill. Uses 1¼″ round steel, 6 ft. changes. Good condition. $700.00

Write for our complete list.

O. B. AVERY COMPANY
1325 Macklind Ave. St. Louis, Mo.

FOR SALE—REBUILT EQPT.

2—Duplicate AMERICAN 0-4-0 S.T. Steam Locomotives—42 tons, Cyl. 14″x22″, Tractive Power 17,410 lbs.
1—56 BALDWIN 0-6-0 Switcher Locomotive, Separate Tender, Cyl. 19″x24″, Tractive Power 26,000 lbs.
1—8 Ton Standard Ga. VULCAN Gasoline Locomotive, Hand Brakes.
2—PLYMOUTH Model FL, 4 Ton, 24″ Gauge Gasoline Locomotives.
1—WHITCOMB Model CS-4, 4½ Ton, 24″ Gauge, Gasoline Locomotive.
1—C. H. & E. No. 11, Triplex Road Pump.
1—FORDSON Tractor — Pneumatic Tires.
1—30 H.P.—"J-B" Feed Mill.
Other Types of Equipment, Too
We are also manufacturers of Carry-all trailers, 10 to 40 Ton Cap'y.

SOUTHERN IRON & EQUIPMENT COMPANY
Plant & General Offices:
ATLANTA, GEORGIA

Crushers—Elevators—Screens Sand Washers—Pumps—Conveyors

1—NEW and 1 — Sec. Hd. 9″x15″ Jaw Crusher.
2—2 1030 CHAMPION Roller Bearing Jaw Crushers.
1—12″x26″ CHAMPION No. 6 Jaw Crusher.
1—4½″ TRAYLOR T Fine Gyratory Crusher.
1—Set STURTEVANT Balanced Crushing Rolls 21″x10½″.
2—M-20 QUAKER CITY Hammer Mills.
1—HAISS 18″ self-feeding Bucket Loader, electric, traction wheels.
1—30 ton WINSLOW Truck Scale.
1—1¼ yard NORTHWEST full caterpillar gas. Crane, 45′ boom.
1—½ yard UNIVERSAL Power Shovel.
1—½ yard BYERS Shovel.
1—6″ MORRIS Sand Dredging Pump.
1—4″ MORRIS Sand Dredging Pump.

JOHNSON AND HOEHLER, Inc.
Lansdowne, Pa.

FOR SALE!

1—Rotary Kiln, 6′x7′x100′.
1—Kennedy Van Saun 8′x12′ Air Swept Tube Mill.
2—Jeffrey Hammer Mills, 24″x36″, 18″ x24″.
1—Denver 36″x16″ Crushing Rolls.
3—Tyler Hummer Screens, 3′x5′, 4′x5′.
2—Raymond Mills, 2 and 4 rolls.
1—Raymond No. 1 Impact Mill.
6—Rotary Dryers 3′x18′, 4′x30′, 4′x40′, 5′x35′, 6′x65′.
16—Jaw Crushers, 3″x5″ to 84″x56″.
14—Hammer Mills, Williams, Jeffrey, Gruendler, JayBee, 5 to 100 HP.
10—Steel Bins, 10 to 100 tons.
3—Tube Mills, 4′x16′, 5′x22′.
6—Oliver Filters, 3′x2′ to 11′x8′.
6—Dorr Thickeners and Classifiers.

Partial List Only. Send for bulletins.

BRILL Equipment Co.
183 VARICK STREET NEW YORK

FOR SALE

2—Marion Model 490 heavy duty quarry shovels, 2¾ c. y., Ward-Leonard controls, 2300 V. a. c. input voltage; 250 V. d. c. operating voltage. Completely overhauled electrically and mechanically. Ready for service—immediate shipment. Many extra parts including 3½ c. y. Essco dippers, clamshell equipment, fairleads, and 65 ft. booms.

Box No. 112
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538 S. Clark St. Chicago, Ill.

Don't Delay — SPECIAL OFFER — *Immediate Shipment*

HEAVY DUTY **RUBBER HOSE** GUARANTEED

WATER HOSE
Each Length with Couplings Attached

I.D. Size	Length	Price per Length
¾″	25 feet	$4.50
	50 "	9.00
1″	25 "	6.25
	50 "	12.00
1¼″	25 "	7.50
	35 "	10.50
	40 "	12.00
	50 "	15.00
1½″	25 "	10.00
	35 "	14.00
	50 "	20.00

LARGER SIZES ALSO AVAILABLE

AIR HOSE

I.D. Size	Length	Per Length	Couplings
½″	25 feet	$5.00	$1.50 Pair
	50 "	10.00	1.50 "
¾″	25 "	7.50	2.50 "
	50 "	15.00	2.50 "
1″	25 "	10.00	3.50 "
	50 "	20.00	3.50 "
1¼″	Price on Application		
1½″	"	"	
2″	"	"	

OTHER SIZES ALSO AVAILABLE

All Prices—Net—F.O.B. New York—Federal Excise Tax Included
ALL HOSE GUARANTEED

CARLYLE RUBBER CO., Inc.
64 PARK PLACE NEW YORK, N. Y.

LOCOMOTIVES
ALL STANDARD GAUGE EQUIPMENT

SADDLE TANK TYPE
One 4-Wheel Steam Saddle Tank..30 ton
One 4-Wheel Steam Saddle Tank..39 ton
One 4-Wheel Steam Saddle Tank..50 ton

SWITCHERS
One 4-Wheel Std. with Tender....40 ton
One 6-Wheel Std. with Tender....52 ton
One 6-Wheel Std. with Tender....68 ton
Two 6-Wheel Std. with Tender....71 ton

ROAD
Two 6-Wheel MOGUL 2-6-0. 52 & 56 tons
Two 8-Wheel CONSOLIDATED. 82 tons

ALSO ATLANTIC & SANTA FE TYPE ENGINES

Also: Hopper, Gondola, Flat and Box Cars

Steam and Crawler Type Gasoline Cranes

RAILWAY ACCESSORIES COMPANY
Carew Tower Cincinnati, O.

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CHICAGO 1155-S. Washtenaw Ave. | NEW YORK 30 Church St., Dept. ENR
PITTSBURGH P. O. Box 2933, Dept. ENR | PHILADELPHIA 1503 Race St.

EQUIPMENT CORPORATION of AMERICA

WE SERVE 4 WAYS
BUY | REBUILD
SELL | RENT

4

WANTED

ROTARY KILNS & DRYERS CRAWLER & LOCOMOTIVE CRANES

●

IRON & STEEL PRODUCTS, INC.

37 years' experience.

13490 S. Brainard Ave., Chicago, Illinois

"Anything Containing IRON or STEEL"

Wanted: Experienced crane and shovel repair men. Also one man experienced in handling men to take charge of small shop.

Location: Chicago suburb.

Box 132
PIT AND QUARRY PUBLICATIONS
538 S. Clark St. Chicago, Ill.

WANTED

Motor—301 Koehring.
Portable gasoline drive elec. welder.
6-in. centrifugal pump gasoline drive.
¾ gas. shovel.
3 yd. dump truck.

JOHN RITTER
WALDORF, MARYLAND

WANTED TO BUY

A small complete used semi-portable agricultural and crushed limestone plant located in central Indiana. Stedman pulverizer preferred. Will move. Give full details.

Address all replies to
Box 116
PIT AND QUARRY PUBLICATIONS
528 S. Clark St. Chicago, Ill.

WANTED

One ladder type cutter to work with a six or eight inch Dredge pump.

One sand Classifier—60" or larger.

One sand settling tank to be 5', 6', or 7'.

BLISSFIELD BUILDERS SUPPLY CO.
East Adrian St. Blissfield, Mich.

Wanted quarry foreman for year around operation in central Illinois. Should understand hydraulic or sluice mining and blasting. Reply giving age, experience, salary expected and references.

Box 108
PIT AND QUARRY PUBLICATIONS
538 S. Clark St. Chicago, Ill.

DIESEL ENGINES WANTED

1500 HP in one or more units with or without Generators. Single unit preferred. Give full information.

BOX 120
PIT AND QUARRY PUBLICATIONS
538 S. Clark St. Chicago, Ill.

WANTED

Back hoe for Northwest Model No. 25 (¾ yd.)

BUFFALO TOP SOIL CORP.
3580 Sheridan Dr. Buffalo, N. Y.

WANTED—USED

Jaw crusher 6x36 or 8x36 short head Gyratory Cone Crusher.
⅝ yd. shovel, good condition.
18" and 24" Conveyor belting.
8" Turbine Pump, 80-100 ft. setting.
1 Bucket loader.

CEMSTONE PRODUCTS COMPANY
1520 East Minnehaha St. St. Paul, Minn.

ELECTRICAL MACHINERY

Motors and Generators, A.C. and D.C. for sale at attractive prices. New and Rebuilt. All fully guaranteed. Write for List and Prices.

V. M. NUSSBAUM & CO.
FORT WAYNE, IND.

FOR SALE—A GOOD TIME TO BUY

Jaw Crusher 84x56—Gyr. No. 12N
Roll Crusher 54x24—Rod Mill 4'x8'
Dump Cars (20) 12 yd.—(10) 16 yd. steel
Shovels (3) 50B steam cat—(1) 35 B cat
Bucket 7 yd. dragline new with teeth
Barges (2) steel flush deck 130x30
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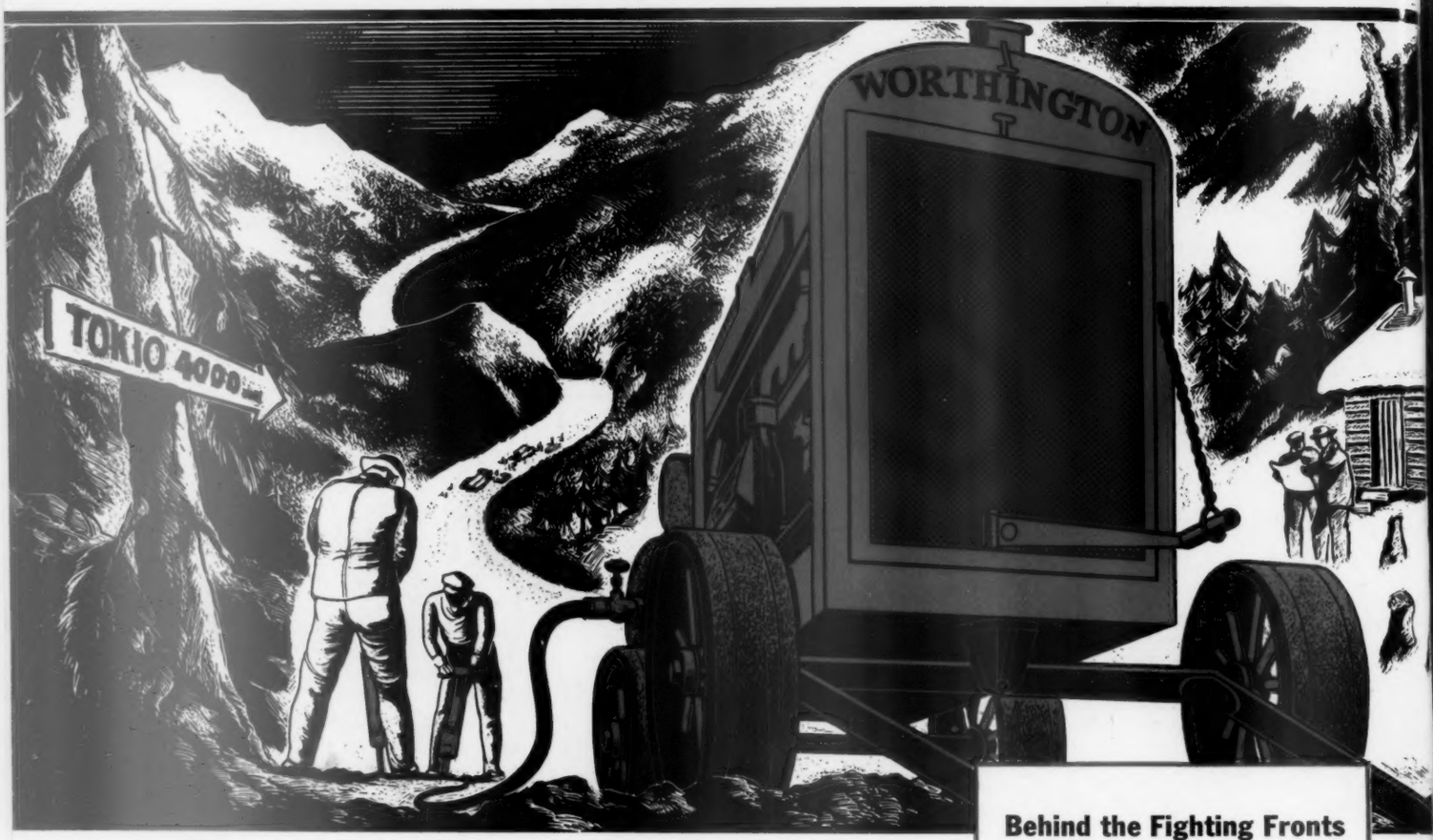

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